KEY DETERMINANTS IN BUILDING FINANCIAL CAPABILITY AMONG MIDDLE SCHOOLERS WITH A SCHOOL-BASED FINANCIAL LITERACY EDUCATION PROGRAM

By

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A DISSERTATION SUBMITTED TO
THE COMMUNITY ECONOMIC DEVELOPMENT PROGRAM
OF SOUTHERN NEW HAMPSHIRE UNIVERSITY
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS OF
DOCTOR OF PHILOSOPHY IN COMMUNITY ECONOMIC DEVELOPMENT

I certify that I have read this dissertation and that, in my opinion, it is fully adequate in scope and quality as a dissertation for the degree of Doctor of Philosophy.

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Rising in importance at various life stages, financial literacy and welfare-enhancing financial behaviors are crucial life-skills for youth to develop in their early teens. Financial capabilities could be built in schools to keep pace with today's fast-changing and complex financial marketplace. Their financial decisions will influence their future economic well-being. This study examined the relative effectiveness of variations of a co-curricular financial literacy education program offered to eight graders of a Middle School in New England. Mixed methods were utilized first, to determine differences in program effects at improving the students' financial literacy and changing their financial attitudes and behaviors; and second, to uncover the determinants of the outcomes in building the students' financial capability. There were differences found in degrees of improvements in financial knowledge and financial attitudes between each one and another variant of the program. Intervening variables, including influences of the family and peers, having a job and access to money, were also found to affect the financial outcomes.

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1 INTRODUCTION

Financial literacy is critical in sustaining a desired quality of life in a monetized society. It is a necessary life-skill to be adept at navigating the array of unstandardized financial products and services in today's fast-changing and complex financial marketplace. As money is a medium of exchange for goods and services, individuals are expected to make a wide range of financial decisions for themselves and their families. In the aggregate, financially competent citizens play a role in the smooth functioning of financial markets and the nation's economic stability (OECD, 2005; Hilgert, Hogarth, & Beverly 2003). Yet less than 50 percent of adults made the passing mark in a national financial capability test (Lusardi, 2010).

Rising in importance at various life stages, financial literacy is vital for young adults. They need to develop financial capabilities that will bear on their future economic well-being. Grounding in age-appropriate financial knowledge, skills and behaviors provides the readiness to assume economic responsibility and take financial risks when adulthood is reached. Young adults will have to live with the consequences of their personal financial decisions and their money management decisions. On the individual rests the burden of financial well-being because changes in regulations have presumed it (O'Connell, 2008). They have to deal with financial decisions for post-secondary education, buying a home and providing for retirement.

The huge market of teens in the US, ages 12 to 17, a population of 25.6 million in 2006, was estimated at $189.7 billion in that same year. Spending was expected to reach $208.7 billion by 2011, despite a projected 3% decline in the population of this age group in that same period (Packaged Facts, 2007). Teens own money accumulated from job earnings, allowances from parents, "as needed" sums from parents, and monetary gifts (Alhabeeb, 1996; Doss, Marlowe & Godwin, 1995). In 2006, the average annual income of 12-14-year-olds was about $2,167, while for 15-17-year-olds it

was about $4,023. Aggregate income of teens (12-17-year olds) was calculated at $79.7 billion in 2006 and rising to $91.1 billion in 2011 (Packaged Facts, 2007).

Financial institutions offer a suite of youth-oriented products such as savings accounts (OCC, 2011), a mutual fund for kids with investments as low as $20, a prepaid card and "high school" checking accounts (Kim, 2006). A national survey showed that 34.7% of the high school respondents have at least one credit card, 53% an ATM ("debit") card, and 75% a savings and/or checking account (Mandell, 2009a).

The huge amount of money that teenagers handle is not matched by the level of financial literacy needed to make wise financial decisions and manage money efficiently. The Jump$tart Coalition for Personal Financial Literacy tracks financial literacy studies among the youth. One of these measures is the biennial national survey, administered since 1997, which tests high school seniors' basic financial knowledge and skills in areas such as income, money management, saving and investing, and spending and credit. It also determines if they possess the necessary knowhow in personal finance to start on their own. Not once did the average score reach a passing grade of C (60%). Only about 10% of each cohort got at least C or better in the test (Mandell, 1998, 2008, 2009a). These results show little improvement despite the increase in the number of states mandating the inclusion of personal finance as a separate course or incorporation of personal finance into the K-12 curriculum.

An indication of how young adults fare in managing their financial resources can be seen in looking at the levels of debt that today's youth carry. The average debt for graduating college seniors with loans rose from $18,650 in 2004 to $24,000 in 2009, or about six percent per year (Cheng & Reed, 2010). It was up at $25,250 in 2010 (Reed, 2011). Median credit card debt among college students grew from $946 in 2004 to $1,645 in 2009 (in 2004 dollars), a 74% rise (Sallie Mae, 2009).

Besides consumerism, advertising lures, baits of financial scams and peer pressure, high school students have to deal with how to afford the cost of living and investment for their post-secondary education. Hence the financial literacy levels of high school students have to catch up with the amount of financial resources they must raise and manage after they graduate from secondary school or its equivalent.

1.1 Framing the Problem

Conceptually, Figure 1 frames the phenomenal problem of youth financial illiteracy, unpreparedness and vulnerability. Persisting in a culture of instant gratification that is stoked by advertising and facilitated by available credit and ease in buying through the internet, the lack of financial competence makes youth quite vulnerable to over-spending, impulse-buying, scams, economic shocks and over-indebtedness.

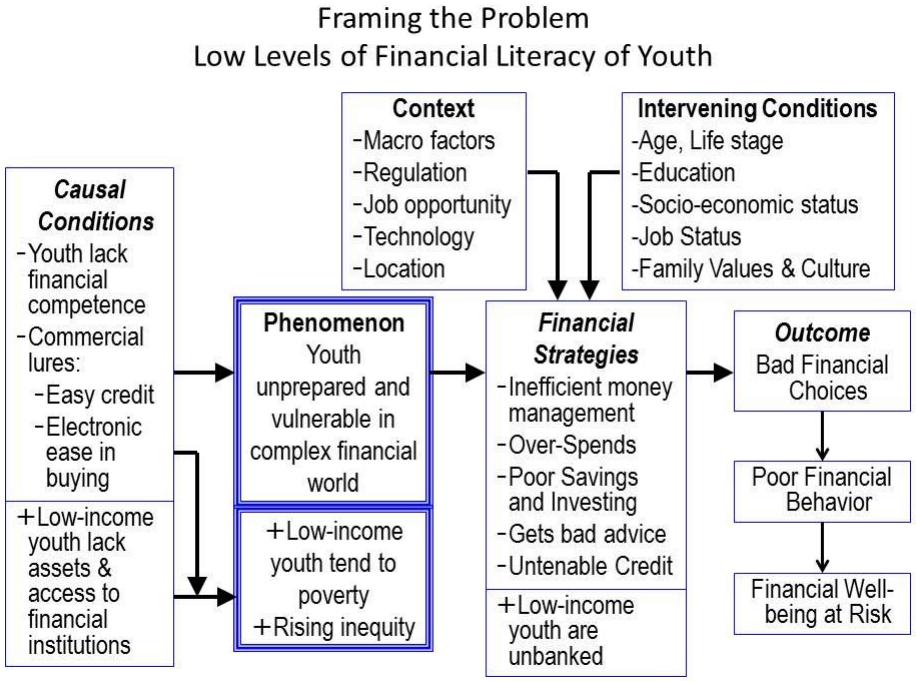

Figure 1.1 Framing the Problem of Youth's Low Levels of Financial Literacy

It is perhaps more challenging for children of low-income households where lack of financial resources and lack of access to financial institutions exacerbate the result of low levels of financial literacy (Johnson & Sherraden, 2007). Without the appropriate intervention, they will tend to live in poverty. However, identifying the students of low-income families was not a part of this specific study. Although the importance of this issue was recognized, lack of access to this sensitive information made it a limitation for this study.

At low levels of financial literacy, youth would exhibit financial strategies or behaviors that would not serve their best interest. They could manage money inefficiently, spend beyond their means, have poor savings habits, fail to get good advice and carry unsustainable debt. The consequences of these behaviors follow a logical path. The short-term outcome of these financial behaviors starts with bad financial choices, which in turn worsen financial behavior, thus putting their future financial well-being at risk. Bad financial habits that begin at a young age may be carried on to adulthood. Financial problems would likely result.

Understanding the causal conditions that affect the level of youth's financial capability provides input to effective program designs that can potentially reverse financial illiteracy and develop financially competent individuals. Consideration of context and intervening conditions could supply the variety of approaches to effective program delivery and format.

Limited in guidance about financial matters from their families, young adults look to schools and other institutions to learn basic financial knowhow. Financial Literacy Education (FLE) Programs seek to remedy the problematic phenomena that youth are unprepared to face a complex financial world, and vulnerable to making poor financial decisions and mismanaging their money. Participation of youth in FLE programs theoretically equips them with age-appropriate financial knowledge, skills and confidence that foster financially sustainable behaviors. If young adults apply these principles in

their lives, this would help them overcome their vulnerabilities in money matters and advance towards a financially secure future.

Overall, FLE programs are intended to achieve the short-term outcomes of financial literacy and motivate participants to enhance their financial competence with changes in financial behavior. Ultimately, the practice of welfare-enhancing financial habits contributes to their financial well-being. Figure 2 depicts the theory of change that FLE programs aim to accomplish.

Successive FLE programs will aid adolescents transitioning to adulthood to make well-informed financial decisions, adopting welfare-enhancing financial behaviors, and eventually, securing their financial future. Financial behaviors/strategies can be modified within certain contexts and intervening conditions (Huston, 2010; Hung, Parker & Yoong, 2009).

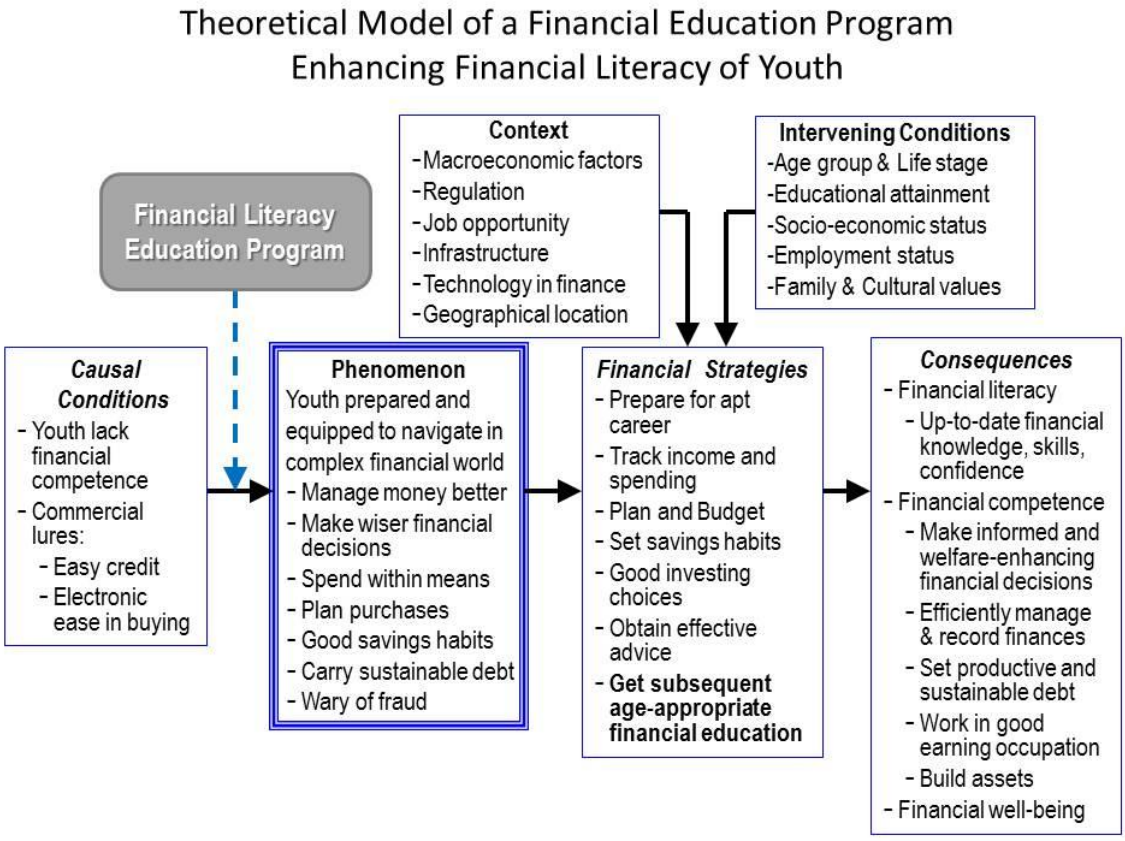

Figure 1.2 Theoretical Model for Financial Literacy Education Program's Role in Enhancing Financial Literacy

A variety of FLE programs exists for children and youth but McCormick (2009) finds no comprehensive strategies for educating them about personal finance. Despite the growing advocacy of experts recommending that financial education begin early (Mandell, 2009b); it is less common in elementary school and middle school than in high school (Suiter and Meszaros, 2005). Much less is there a consistent approach to delivery and assessment of financial education targeting youth (Varcoe, Martin, Devitto & Go, 2005). In fact, there are no standardized tests to measure financial literacy, thus hampering assessments that could determine the effectiveness of FLE programs. Very little evaluation of their effectiveness has been documented (Varcoe, et al., 2005; Atkinson, 2008; McCormick, 2009; Willis, 2009).

As more social and public development investments are channeled to financial literacy programs, it is important to examine which aspects of the intervention are effective enhancers of financial literacy and so aid teenagers to make wise financial decisions. Understanding the factors that contribute to or hinder from the acquisition of financial capability can help policymakers and educators design effective interventions targeted at the young population (Lusardi, Mitchell & Curto, 2010).

The financial crisis of 2008 is viewed as an outcome, partly, of the lack of financial competence of those who fell for the sub-prime mortgage scheme. The economic crisis can serve also as a warning in view of the fact that the next generation of young adults is still ill-equipped to deal effectively with a complex financial marketplace. Found crucial to prevent a repeat of the financial disaster, FLE programs have increased more in number than before the crisis erupted.

Increasingly, advocates subscribe to the strategy of incorporating personal finance in the K-12 curriculum. Schools could play a pivotal role in delivering personal finance education (Atkinson, McKay, Kempson & Collard, 2006; Mandell, 2008; CEE, 2009, 2011). By 2012, four states required at least a one-semester course devoted to personal finance, 20 states mandate personal finance

instruction incorporated into other subject matter, and the rest of the states do not have such a requirement, although personal finance may be offered as an elective (Jump$tart, 2012).

Enabling individuals to make wise financial decisions given the range and variety of options of non-standardized financial services and products is a compelling argument to equip youth early. In a culture that expects personal responsibility and self-sustainability, financial literacy is an essential component of a successful adult life. Their economic well-being in adulthood hinges on the extent to which individuals are capable of making complex financial decisions and managing their money. The options open to post- secondary graduates demand from young adults the ability to effectively meet the financial challenges of investing several years and resources to further education, enter the workforce, or balance both tracks.

Education has been known to correlate with positive economic outcomes. However, has education kept up with enabling students to be ready to face the rapidly changing financial markets and technology in the context of a globalized economy? Financial markets are so linked to technological advances that it now requires new sets of knowledge, skills and application. Literacy and numeracy must be added to the capabilities of reading, writing and 'rithmetic. Students need to be able to "read and write" financially (Lusardi, 2008). While the goal of education is to prepare youth to be employable citizens, it could expand to include preparing them adequately to manage the income they earn from that employment (Danes & Haberman, 2007). These are compelling arguments to equip youth early.

1.2 The Financial Literacy Education Program of a Middle School in New England

A Middle School in New England has been implementing a Financial Literacy Education Program since 2005 to its Grade 8 students. The FLE curriculum is aligned with the State's policy on personal finance programs in schools. The program comprises a three-module in-class series of

topics, namely, (1) Career Investigation, (2) Budget and Checkbook Management, and (3) Savings and Investment Strategies. Components of the modules are incorporated in Math, Language Arts and Social Studies. Teachers are given the flexibility to select modules of the FLE curriculum they find suitable for their classes. Traditional classroom lectures are complemented with different levels of experiential learning through simulations. The fourth module called the Math Fair is its culminating event, which simulates a real-life setting for students to integrate those in-class elements around the concepts of "sticking to a budget" and "spending within their means". The Math Fair provides hands-on experience of the personal financial management process. At the fair, each student works on a budget sheet which starts with their calculated take-home pay (monthly salary less taxes) based on their career choice. Under this income constraint, they create a monthly savings and spending plan, allocating for expenses in such items as food, clothing, housing, transportation, insurance, home furnishings, entertainment, student loan payment and a car loan amortization. Students aim for a balanced budget and a positive cash balance at the end of the fair.

As a partnership between a school and a local credit union, the FLE Program is supported by the financial institution and its network in various ways. Teachers can avail themselves of credit union representatives to give presentations to their students about specific financial topics covered in the FLE program such as checkbooks and credit cards. Partner credit unions also participate in simulations that give a practical experience to the students. For example, some of the students go through the process of applying for car loans with loan officers of the credit union. The credit union and its business network organize, set-up and get the collaboration of businesses in the community to run the Math Fair. The participation of businesses and credit unions in the Math Fair makes the simulation as close to reality as possible.

On its fifth year, the program's effectiveness has yet to be measured. For that matter, while interest in studies about personal finance issues and evaluation research are increasing for FLE

programs for college and high school students, very few studies that feature middle school children exist in the literature (McCormick, 2009). In this study, this New England Middle School provides the case for the research on the effectiveness of a school-based FLE program for middle school children.

1.3 Purpose of the Research

In the academic year 2010-2011, the Middle School offered a FLE program incorporated into other subject matters. This was composed of the following modules: (1) Career Investigation; (2) Budget and Checkbook Management (Checkbook Project) and 3) the Math Fair. In this school, because of pressures to improve the students‘ scores in the state's standardized tests, administrators and teachers have had to decide to remove one of the modules in the FLE program. Although the state to which the school belongs defined the personal finance standards for K-12, it did not require implementation of the state standards and testing of personal finance knowledge (Council for Economic Education's Survey of States 2011). So the school has been implementing this program on a voluntary basis since 2005.

All of the four eighth grade clusters participated in the Career Investigation module and the Math Fair. Only one cluster also took up the year-long Checkbook Project besides their participation in Career Investigation and the Math Fair. Based on this arrangement, the main purpose of the study is first to determine the extent to which this FLE program, as implemented in the school year 2010-2011, was effective in improving the level of students' financial literacy and changing their financial attitudes and behaviors; and secondly, to uncover the determinants of the success and failure of the school-based FLE program in building up the financial capability of participating students.

Results of the study will inform the middle school teachers and administrators about the effectiveness of the FLE program, be a basis for improvements and justify its continuance and support from the school's sponsors.

2 LITERATURE REVIEW

A lack of consensus on the conceptualization of financial literacy is evident in existing research that seeks to measure it (Huston, 2010; Remund, 2010; Hung, Parker & Yoong, 2009). Differently conceptualized in studies, financial literacy took on varying operational definitions and values. Lacking a clear definition, comparative studies of outcome measurements are difficult. It also impedes the design of meaningful and effective financial education programs that are appropriate at various life stages relative to personal and economic situations. What could not be defined could not be designed. Since the expected outcome of financial education is to improve financial literacy, defining financial literacy is fundamental to financial literacy education (FLE) design, assessment of effectiveness and consistency in outcome measurements.

2.1 The Concept and Definition of Financial Literacy

The notion of literacy can be conceptualized as a human capital construct from which it can be operationalized and measured through standardized testing.

The notion of literacy

The National Assessment of Adult Literacy (NAAL) in the United States uses the standard definition of literacy in its 1992 and 2003 National Adult Literacy Surveys that achieved a comprehensive evaluation. The definition is both task-based and skills-based. The task-based or conceptual definition is the following: “Literacy is the ability to use printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential” (White & McCloskey, 2005). The definition focuses on the ordinary literacy tasks an adult can and cannot perform.

The 2003 NAAL adds a skills-based or operational definition of literacy that focuses on the knowledge and skills an adult must possess in order to perform tasks in daily life in the U.S. Skills

range from basic word-level skills such as recognizing words, to higher level skills like drawing inferences from continuous text. When operationalized, this task-based definition of literacy covers three broad areas: 1) Prose literacy (to search, understand and use continuous text such as editorials, brochures and written instructions); 2) Document literacy (search, comprehend and use non-continuous text in various formats such as job applications, bus schedules, maps, tables and other tabular/graphical information); and 3) quantitative literacy (to identify and perform computations, either alone or sequentially, using numbers embedded in printed materials such as reconciliation of a checkbook, computing the amount of interest on a loan, or in an advertisement or other arithmetic and numerical information). Each literacy area has its own standardized testing instrument and scoring scale (White & Dillow, 2005; Huston, 2010).

In the broadest sense, therefore, literacy consists of understanding (i.e., knowledge of words, symbols and arithmetic operations) and use (ability to read, write and calculate) of materials related to prose, document and quantitative information (Houston, 2010).

The notion of literacy has been extended to a variety of content areas that require specific skill sets in order to function effectively in each area. It is common to encounter computer literacy (Wecker, Kohnle, and Fischer, 2007), media literacy (Potter, 2008; Koltay, 2011) and health literacy (Speros, 2005, Nutbeam, 2009). For example, health literacy measures how well an individual can understand and use health-related information related to five activities in the health domains of health promotion, health protection, disease prevention, health care maintenance and systems navigation.

For the 2003 adult literacy survey, the NAAL includes a measure of health literacy among the types of literacy (prose, document, quantitative) to assess. Each type of literacy measures how well an individual can understand and use content-specific information. The health literacy component is designed to specifically measure adults' ability to use literacy skills to read and understand health-

related information such as medication information, medical instructions, health insurance forms, and prevention and wellness information to perform health-related tasks (White & Dillow, 2005). The data serves as input for the development of health-related info and programs, and establishes a baseline for tracking progress in future assessments.

Definition of financial literacy

Applying the foregoing notion of literacy to the context of personal finance, financial literacy focuses on the understanding of finance-related information and the ability to apply reading comprehension and numeric skills in this content area. Huston (2010) defined financial literacy as "measuring how well an individual can understand and use personal finance-related information." This definition is direct and consistent with other standardized literacy constructs.

Like general or health literacy, Huston (2010) conceptualized financial literacy as having two dimensions—understanding (personal finance knowledge) and use (application of personal finance concepts and products). As to content, Huston (2010) identified the following as the common personal finance domains of financial literacy:

- Personal finance basics – time value of money, purchasing power, personal financial accounting concepts;
- Borrowing – bringing future resources into the present through the use of credit cards, consumer loans or mortgages;
- Saving/investing – saving present resources for future use through the use of saving accounts, stocks, bonds or mutual funds; and
- Protection of resources – either through insurance products or other risk management techniques.

For the purposes of this study, a distinction is made between the notions of financial literacy and financial knowledge. Some studies have used these terms interchangeably or left them

undefined (Huston, 2010, Hung, Parker & Yoong, 2009). Both concepts involve human capital but different constructs. Financial knowledge involves understanding of financial concepts as it relates to personal finance and managing money. It is an integral dimension of financial literacy. The other dimension of financial literacy extends to the application of that financial knowledge. This implies that an individual must have the ability and confidence to use financial knowledge to make informed and welfare-enhancing financial decisions (Huston, 2010; Willis, 2009; Fox, Bartholomae & Lee, 2005).

Knowledge and the ability to apply this knowledge are crucial in navigating the array of un-standardized financial products and services offered in platforms following the changes in technology. Further, deregulation of financial services puts the responsibility on legal persons who make the choices, whether these are selecting among credit card offers, investments for post-secondary education, buying a home or retirement.

As a human capital construct, the financial literacy of an individual is influenced by the level of endowed and attained human capital he/she possesses. For example, the individual's lack of facility in undertaking mathematical operations will affect his/her financial literacy. But using tools like a calculator or software will compensate for these deficiencies. Thus, it is more appropriate to focus on information directly used to effectively navigate personal finance rather than on numeracy skills for a financial literacy measure (Huston, 2010).

Based on this conceptualization of financial literacy, an instrument is developed to measure financial literacy in terms of whether a person knows the information as well as if he/she can apply it appropriately. In other words, financial literacy is shown in "one's ability to perform a host of tasks related to money" (Remund, 2010), based on finance information.

An expanded definition gives the types of abilities a financially literate individual possesses in order to function effectively in a monetized society.

From existing research, Remund (2010) drew various conceptual definitions of financial literacy and set them into five categories: "(1) knowledge of financial concepts; (2) ability to communicate about financial concepts; (3) aptitude in managing personal finances; (4) skill in making appropriate financial decisions; and (5) confidence in planning effectively for future financial needs." Intuitively, a distinction is drawn between decision-making skills for short-term financial management and confidence in long-term financial planning with the goal of securing financial and economic well-being. Decision-making in the short-term and planning for the future are important skills to develop. Intent on recommending a more consistent conceptual definition of financial literacy, Remund (2010, p. 284) frames the following definition:

> *Financial literacy is a measure of the degree to which one understands key financial concepts and possesses the ability and confidence to manage personal finances through appropriate, short-term decision-making and sound, long-range financial planning, while mindful of life events and changing economic conditions.*

He makes the point that "knowledge drives aptitude," which in turn influences the financial behavior of the one who manages money. He recognizes that experience is needed to actualize knowledge into skills, as Hilgert and Hogarth (2002) have shown in their research. All the interrelated factors interact within a certain context and the broader regulatory and economic conditions.

Financial literacy is needed to adequately and appropriately perform tasks in personal finance to enhance financial well-being. But besides financial literacy, financial behavior is also influenced by personal attitudes, degree of self-control, parents and family, peers and job (Huston, 2010). There is the influence of living in a culture of instant gratification enticed by aggressive consumer marketing and readily available credit (Remund, 2010; Kozup & Hogarth 2008). Financial behavior can also be influenced by the state of the economy, financial institutions and regulation.

These influences can support or hinder a person from exhibiting favorable financial behaviors that enhance the financial well-being of the individual and his/her family.

Financial literacy to financial capability

Instead of the term "financial literacy", The United Kingdom, Canada and other Commonwealth nations use the term "financial capability" to emphasize a broad concept, "*encompassing people's knowledge and skills to understand their own financial circumstances, along with the motivation to take action*" (HM Treasury, 2007; FSA, 2006). Financial capability is composed of four domains: (1) managing money – making ends meet, tracking of one's own finances including cash flow, earnings, savings and debt; (2) planning ahead – attitude and behavior in preparing for anticipated significant financial commitments, and providing for unexpected events; (3) choosing products – making informed choices and purchasing appropriate financial products; and staying informed – keeping abreast of changes in the economy and modifications of existing products, and awareness of new financial products (Atkinson et al., 2006, O'Connell, 2008).

Johnson and Sherraden (2007) make a distinction between financial literacy and financial capability. In their studies of economically disadvantaged youth, the authors surmise that two gaps need a targeted policy intervention. These gaps are lack of financial literacy and access to mainstream financial institutions. They subscribe to the strategy that aims at *financial capability*, a notion based on the writings of Amartya Sen and Martha Nussbaum. The authors use financial capability to signify the condition of individuals resulting from both having developed financial knowledge and skills, as well as having access to financial policies, instruments and services. They argue that without gaining such access, financial knowledge and skills alone do not improve the functioning of the individual, much less improve their financial well-being.

This fits Huston's (2010) view that despite possessing financial literacy, financial behavior will be restrained if external conditions make it impossible for the individual to act. In the case of most

low-income households, lack of access to financial policies, products and services is a barrier to fully function or fully exhibit financial behaviors expected of a financially literate individual.

This study will use Remund's (2010) definition of financial literacy in the content area of personal finance listed by Huston (2010).

> *Financial literacy is a measure of the degree to which one understands key financial concepts and possesses the ability and confidence to manage personal finances through appropriate, short-term decision-making and sound, long-range financial planning, while mindful of life events and changing economic conditions.*

2.2 Financial Education

Financial education is one method intended to increase an individual's human capital, in the area of financial literacy. It is important for the instruments that measure financial literacy to be well-designed in order to adequately capture the extent to which financial education enhances the financial knowledge and skills needed to behave effectively in improving financial well-being (Huston, 2010; Hung, Parker & Yoong, 2009).

The OECD (2005) defines financial education as providing clear expected outcomes of increase in knowledge, improvement in skills and changed behavior that lead to greater financial well-being.

> *Financial education is the process by which financial consumers/investors improve their understanding of financial products and concepts and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being (p. 13).*

Among the variety of modes of delivering FLE programs, the use of simulations is considered an effective way to teach personal finance to young people (O'Neill, 2008; Lopez-Fernandini & Murrell, 2008). Vast amounts of literature on experiential learning subscribe to the use of simulations that feature educating professionals in various areas: medicine, business management and aeronautics, to name of few. Replicating the essential facets of a task or a situation, simulations provide the learner an opportunity to learn by experience what decisions to make and what actions to take given a real life setting. Students understand the consequences of the subsequent actions they take in a safe environment. Learning becomes more meaningful in an interactive, engaging, fun educational setting (Koehler, Lawroski & Bischoff, 1995).

2.3 Evaluation of Financial Literacy Education Programs

The number and types of financial literacy programs have increased in the last ten years. But evaluation of their effectiveness has not kept pace (Lyons, 2005; McCormick, 2009; Wolfe-Hayes, 2010). A review of worldwide initiatives on measuring the effectiveness of various types of financial education brings O'Connell (2008) to conclude that the few evaluations she found show mixed and inconclusive results. It was not clear whether this is due to poor evaluation methods or weak program design. Lyons, Plamer, Jayaratne & Scherpf (2006, p. 208) found that "many financial education providers still do not have a basic level of evaluation capacity and are unable to identify program outcomes and design effective evaluation instruments."

The diversity in findings has generated calls for developing a consistent framework for program design and assessment. Researchers agree that there should be stronger theoretical linkages between financial education and behaviors, so as to develop a framework that can inform the choice of outcome measures (Fox, Bartholomae & Lee, 2005; GAO, 2004; Lyons et al., 2006). Specifically, Fox, Bartholomae & Lee (2005, p. 204) suggest that:

An overarching framework for the evaluation of financial education programs would provide a guide or road map for collecting information about program development, delivery, effectiveness, and accountability. Widespread adoption of key elements in a common framework will not only make program evaluation less daunting for financial educators, by providing a guide and frame of reference, but also contribute to consistency in data collection and clarity and program comparison.

For the Financial Education Evaluation (FEE) Framework, O'Connell (2008, p. 13) proposes a "hierarchy of outcomes" for participants in financial education programs:

- Participants improve their financial knowledge or skills and/or plan to change their financial behavior.
- Participants change their financial behavior: for example, they join a retirement savings plan, or pay down some debt.
- Participants' personal financial positions improve.

Ultimately, changes in financial behavior and better developed financial skills lead to an improvement of financial well-being.

The use of a framework is a systematic approach to evaluation that can be followed by any financial education initiative. It saves time from "reinventing the wheel", provides clarity on what the financial education intends to change and on what it is to be evaluated, and supplies a consistent database of benchmarks (O'Connell, 2008). However, most of the frameworks developed to date pertain only to financial literacy for college students and adults.

Evaluations of K-12 financial education programs

The paucity of evaluation research of K-12 FLE programs is not surprising (Wolfe-Hayes, 2010; McCormick, 2009) given the privacy issues involving children as research subjects. But the lack

of age-appropriate competencies and measures makes it difficult to compare effectiveness of programs.

The use of randomized control trials could ensure the absence of self-selection bias found in non-randomly assigned evaluation designs. However, there are bias and fairness issues related to depriving a class of students from an intervention while offering it to other classes. If randomly assigning individuals or classes are not feasible, it is possible for evaluators to use randomized program placement—randomly assigning schools or communities into treatment and control groups.

2.4 Financial Literacy Education, a Strategy to Instill Asset Accumulation

Michael Sherraden (1991) in *Assets and the Poor* introduced an asset-based welfare theory in which he articulated that both income and assets are important for personal and household welfare. The notion of welfare refers to a general state of economic well-being. This is true for the non-poor and the poor. The welfare model for the non-poor is characterized by "income plus assets". Income is used for consumption. Savings are not regarded as a residual of income minus consumption but as an asset from the time they were set aside for the purpose of asset accumulation. Having assets is not only a store for future consumption but actually yields welfare effects. Assets yield both additional income and further accumulation of assets. Thus, for the non-poor, intergenerational asset transfers and existing assets are sources of income and wealth accumulation.

In his critique of welfare policy that defines poverty in terms of lack of income, Sherraden (1991) uses an asset-based welfare model for the poor as "income only" to show how the poor will remain poor without support to build assets. He shows that if the poor are only supported with income transfers or free low cost goods and services, the poor, having barely enough for basic consumption needs, would lack capital to build assets. So, they remain poor. The poor need both

income and assets. Regular income pays for daily living expenses whereas assets help cope with economic shocks, allow owners of assets to plan for the future and to build assets.

As the theory behind Sherraden's advocacy to replace welfare policy, the asset-based framework was used in demonstration projects using the "Individual Development Accounts" (IDA), designed for low- to moderate income individuals. These are matched savings accounts intended for building an asset, such as an education, home improvement or to start a business (Wheeler-Brooks & Scanlon, 2009).

The asset-based framework emphasizes the value of assets to attain economic security and social mobility (Sherraden, 1991). Wealth-building assets include financial resources (e.g. savings account, retirement accounts, equities), tangible possessions that have monetary value (e.g. home, business, car), and investments in non-tangible assets (e.g. education, training, social networks). It is clear that with financial assets (financial capital) one can set aside funds to build or purchase tangible assets (physical capital). One can invest in education and training to increase human capital and thus improve one's earning capacity to generate more financial capital and wealth, and help attain financial well-being.

Evidently, financial literacy as a human capital construct is one of the factors needed to make wise financial decisions and manage financial resources efficiently (Huston, 2010). But individuals have to practice welfare-enhancing financial behaviors with consistency in order to contribute to financial well-being.

Young teenagers can be likened to the poor in terms of lacking assets. Still dependent on their parents, middle school students exhibit financial behaviors that are constrained by the limitations of financial resources and ineligibility to access certain financial products and services. However, their financial behavior may differ from that of the low-income population, particularly in discretionary spending (Alhabeeb, 1996). Since their parents assume the responsibilities for basic

needs, teenagers tend to spend money on luxuries and entertainment, whereas the poor use money for basic necessities.

Students' consumption needs are generally subsidized by their parents or a care taker, and in some cases, by institutions. Money for basic needs like food, clothing, transportation and shelter come from the parents (McNeal, 1990). Their protection needs, such as insurance, is an extension of their parents' care. Easily, students can regard the "pocket" money they receive and earn from odd jobs or part-time employment as mostly disposable income (Alhabeeb, 1996). They can choose to spend it for immediate consumption or save it for assets like computers or cars, or invest it in a 529 college savings plan. Doss, Marlow and Godwin (1995) found that teenagers' use of their money depended on its source. Discretionary spending was related to the amount of money they received from parents and as gifts, whereas teen savings was related to the amount of money they earn.

Here's where financial literacy is needed. Financial literacy courses should provide a meaningful purpose to students taking them. To be effective, FLE should encourage students to be future-oriented, once they are on their own. Students, who regard their discretionary money as income, will use it all for consumption of luxury goods such as eating out, snacks, personal grooming products and services, video games and trendy clothes (Packaged Facts, 2007; Alhabeeb, 1996; Beutler, Beutler, L. & McCoy, 2008). This kind of behavior has come to be known as "premature affluence" (Bachman, 1983; Koehler, Lawroski & Bischoff, 1995; Jelks, 2005). It is a spending behavior they will be unable to sustain come the moment when they are self-supporting.

In contrast, students, who hope they can attain economic well-being in the future, and aware that "what I do today can impact tomorrow", do learn to forgo current unnecessary consumption, and will save and invest in assets that support that future (Lusardi, Mitchell & Curto, 2010). They learn the habit of accumulating assets instead of purchasing items for instant gratification (Herbig, Koehler, & Day, 1993). In terms of setting aside financial resources, their financial goals can be assets

such as a car, or a computer or funds for college. Future orientation characterizes their financial behaviors. They are tending to a future goal of general well-being. To achieve that goal, they should practice welfare-enhancing financial behaviors.

The use of "welfare-enhancing" to describe positive financial behavior emphasizes the notion that the actions taken by the student contribute to the accumulation of assets. Sherraden (1991) argues that the possession of assets makes a person have a forward-looking financial attitude. It would be these assets that will support his/her financial well-being at this stage of transition to adulthood. If consistently practiced in consonance with successive FLE (or other programs, self-study or seeking good financial advice), the future adults are likely to attain financial and economic well-being for themselves and their future families.

Spheres influencing financial literacy of youth

Analogous to the inter-convertibility of assets, students' financial literacy, behavior and well-being can be influenced by the assets or capitals provided from three main spheres: the school's FLE program, their homes where parents and caregivers influence their personal innate and acquired level of financial literacy, and their social networks, such as their peer groups and job experience.

Financial literacy education program (FLEP) factor

Human capital (financial knowledge, skills and ability to use them) and social capital (inputs from influential adults and peers that are related to personal finance) can be derived from the school-based FLE Program. These capitals are expected to be enhanced by education. But peers could also be a good or bad influence, enhancing or hindering the students' financial literacy and financial behavior outcomes.

Financial education increases human capital in terms of new and better understanding of financial concepts and learning of financial skills (Scanlon, 2001). Peer influence can reinforce learning in a school setting as it supplies social assets. For example, students can discuss different

strategies to save money. If schools were to be more instrumental in instilling financial capabilities in their students, they could offer age-appropriate FLE programs and nurture social capital development among their students and introduce them to economic actors in the community. For example, parts of the FLE of the Middle School are simulations where students interact directly with representatives of a credit union. If students have not done so before, they will have more confidence in opening a savings account and/or dealing with credit union or bank employees. Confidence is increased by knowing what to do and an element of trust has been generated by the initial interaction.

Fostering social relations could in the future facilitate the help the student needs in tapping social networks for financial credit for college and equity, business or financial advice and informal apprenticeship, (Roy & Wheeler, 2006) as well as recommendations for the job market.

Parents and household factor

Adolescents' financial learning, attitude and behavior have been linked to parents' influence among other factors (Danes, 1994; Shim, Barber, Card, Xiao & Serido, 2009; Shim, Xiao, Barber, & Lyons, 2009; Lusardi, Mitchell & Curto, 2010). Using the theories of consumer socialization and planned behavior to inform a financial socialization process model Shim, Barber et al. (2009) provided evidence that the role played by parents in inculcating financial knowledge, attitude and behavior of freshmen college students in one university is substantially greater than the role played by work experience and high school financial education combined. The primary agents of financial socialization of children and young adults are their parents; it is the family that hones their human capital in many areas of their young lives, including understanding the meaning and use of money (Danes, 1994).

Parents also provide financial capital: money, extension credit cards, ATM cards, gift cards and insurance, as well as the family phone plan, to name a few. In addition, the social network of

parents could be instrumental in the children's first simple jobs around the neighborhood or the community store.

The student as a driver of improvement in financial capability consists of his/her existing human capital (baseline financial literacy), financial assets (e.g. savings), and social capital (family, friends) that are directed towards strategies in managing money, participating in household budgeting and spending decisions. To enhance the students' financial capability from low income households, effective intervention for students combine financial education and matching grants for personal savings intended for financial goals that build assets (Sherraden, 1991; Johnson & Sherraden, 2007).

Peer and job factor

Social networks, starting with family members and kin, relate to the economic function of social capital that allow people to rely on mutual trust, honesty, reciprocity in meeting obligations and mutual help (Putnam, 1993). Learning is more effective when there is trust, such as in the home, in school and among friends (Coleman, 1988) Transaction costs are lower in doing business and hiring the people they trust rather than people with no basis for trusting. The network of social, business and employment relationships of parents can be tapped by the children to find part-time jobs. Social capital reduces the transaction costs associated with formalized mechanisms for coordination, like contracts, setting up bureaucracies for monitoring, litigation and enforcing formal agreements (Fukuyama, 2001). At least, young teenagers get odd jobs without legal contracts through neighborhood networks.

Deconstructing the main spheres that can influence the child's financial literacy affords a way to identify the factors that contribute to its enhancement. This can help isolate the effects derived from the FLE program from influences outside the program. This will refine the outcome measurements and the identification of the determinants of a change in financial behavior and

impact. Since one of the goals of this research is to determine the portion of the financial literacy and behavior outcomes ascribable to a financial education program, there is a need to first recognize the main spheres that significantly affect the outcomes.

Financial education programs relative to other determinants of financial literacy

The challenge in assessing the influence of a financial literacy program on the students' financial capability is one of attribution. The question is: how much of the outcome can be ascribed to the financial literacy program? Part of the outcome can be derived from the students' personal intellectual capabilities, level of financial literacy derived from their parents and other family members (Shim, Barbers et al., 2009), job, their peers (Gutter, Eisen & Way, 2009) and other factors external to the program's influence (Huston, 2010; Hung, Parker & Yoong, 2009). Definitive impact from rigorous studies is rare, including those studies that measure the marginal contributions of the different components of a financial literacy program (Hung, Parker & Yoong, 2009). Impact evaluation results remain inaccurate when confounding factors are ignored.

Lusardi, Mitchell and Curto (2010) examined the determinants of financial literacy among young people by analyzing the data derived from the 2007-2008 National Longitudinal Survey of Youth. Financial literacy was linked to cognitive ability, time preferences, teachers' interest in students, parental background, and peer characteristics. The research found that financial knowledge among the young is strongly influenced by family background. Respondents whose mothers had a college education were more likely to understand inflation. Moreover, those whose parents had stocks or retirement savings when they were teenagers were more likely to know about risk diversification. Thus, financial literacy can be passed on from parents to children.

Shim, Barbers et al. (2009) demonstrated a conceptual financial socialization process model that predicted college freshmen' financial literacy, and in turn was related to their financial attitudes and financial behavior. The model's predictors included parents, work and high school financial

education. The study found that parents' role was substantially greater than that of work experience and FELP combined.

Shim, Xiao et al., (2009) tested a conceptual model of antecedents and consequences of young college students' financial well-being. The study found that parents and formal education in personal finance positively influenced the students' financial knowledge which in turn influenced financial attitudes. Parents also shape the students' financial attitudes even if they have moved away from home. It was also found that financial knowledge, attitudes and self-efficacy influence financial behavior intention. Gutter, Copur & Garrison (2010) showed links of socialization learning opportunities from parents and close friends to financial self-efficacy and which in turn is related to the financial behaviors of using budgets and saving money.

Studies on the sources of financial literacy for high school students show the influence of informal education in financial matters within the family (Danes, 1994; Alhabeeb, 1996; Bowen, 2002; Danes & Haberman, 2007; Koonce et al., 2008;) and high school FLEP (Danes, Huddleston-Casas & Boyce, 1999; Varcoe et al., 2005). Students increased their financial knowledge, developed self-efficacy and improved their behavior in saving and spending wisely. But none of these studies attempted to determine the link between financial knowledge, self-efficacy and behavior.

For middle school children, Mortimer, Dennehy, Lee & Finch (1994) studied the consequences of allowance arrangements. The study found that receipt of an allowance did not increase savings. Doss, Marlowe & Godwin (1995) traced the sources and used of money by middle school children, ages 10-15. The study found that children with money identified for discretionary spending would save more of what they earn than gifts or allowance. It also found that receiving an allowance does not mean that children of this age learn to manage money.

3 CONCEPTUAL FRAMEWORK AND RESEARCH QUESTIONS

The overarching goal of FLE programs (Figure 2) is to enhance the financial literacy of participants which in turn, influences the changes in their financial behavior to improve financial well-being. Financial well-being is associated with the ability to build assets and improve quality of life. The FLE program intends to prepare participants to effectively navigate the array of complex financial products and services at different stages of their lives. At the same time, FLE programs can enable youth to overcome their vulnerability toward overspending, be able to restrain impulse buying, detect fraud and avoid indebtedness.

3.1 Conceptual Definition of Financial Literacy

Using an asset -based approach (Sherraden, 1991), shows that accumulation of wealth or assets is considered a function of the increase of a set of human, financial, physical, natural and social capitals of an individual, and oftentimes his/her household. These capitals are productive in that these generate earning and asset building capacities. In this study financial literacy is considered a human capital construct. Coleman (1988) contends that human capital can be created by changes in persons that bring about skills and capabilities that enable them to act in new ways. Thus, one of the ways students acquire and/or enhance financial knowledge and skills is through their participation in FLE programs.

Applying the definition of Remund (2010) to eighth grade students' human capital is to achieve an age-appropriate financial literacy level. It is a measure of *the degree to which [the student] understands key financial concepts [money management, such as budgeting of earnings and spending, borrowing, saving] and possesses the ability and confidence to manage personal finances through [age] appropriate, short-term decision-making and sound, [but limited] long-range financial planning, while [starting to be] mindful of life events and changing economic conditions.*

Participation of a student in a FLE program in the school setting is an opportunity to enhance human capital (financial knowledge and skills) in the content area of personal finance. Further, the student in a school setting also has social capital through which his/her financial literacy is affected in a specific way. Students' financial literacy enhancement can be facilitated by inputs from a relationship characterized by trust and reciprocity among their peers, teachers, and community program partners. The new relationships fostered through direct interactions with representatives of credit unions definitely contribute to his/her financial literacy.

Having money (financial capital) is key to enhancing financial literacy. Ownership and the relative freedom to manage money give the student experience of financial risks, benefits and consequences of financial decisions and a sense of financial responsibility. Students receive allowances, cash gifts, and money from their parents on a "need" basis and earn money from odd jobs and employment (Alhabeeb, 1996; Packaged Facts, 2007). Access to financial products such as a savings account along with an adequate level of financial literacy is also important to develop welfare-enhancing financial behavior (Johnson & Sherraden, 2007; Huston, 2010). Otherwise the financial tasks in which to apply one's financial knowledge could not be exercised and so limits financial literacy as defined.

Financial literacy has a social dimension. Studies have taken financial literacy as a social construct in explaining that the literacy process is a learning interaction between the student and adults in a family or a teacher in school (Danes, 1994; Danes & Haberman, 2007; Shim, Xiao et al., 2009). Teens add to their financial knowledge, skills and attitudes through discussions with family members (Moschis, 1987; Danes, 1994; Danes, Huddleston-Casas, & Boyce, 1999), with friends (Gutter, Eisen & Way, 2009) and in the class (Bartholomae & Fox, 2002).

Money as the medium of exchange for goods and services means individuals deal with other individuals or institutions to transact any form of exchange. Money is transferred from one person to

another. From the point of view of a child, the first transfer of money to him/her occurs in the family. It signifies support, it has an emotional tie. Social capital in the family plays a role in the creation of the human capital of the children by providing the cognitive environment for them to teach (Coleman, 1988). Parents can directly (by discussing and teaching) and indirectly (by modeling) influence the financial literacy and behavior of the children under their care (Danes, 1994; Bowen, 2002; Shim, Barber et al., 2009). Parents transfer to their children wealth and financial knowledge and skills (Grinstein-Weiss et al., 2011).

Besides the strong influence of their families, the students who participate in a FLE program have different levels of human capital relative to personal finance even before the program starts. Their baseline financial literacy, financial habits and the amount of personal experience with sourcing and their use of money will either facilitate or make it difficult to enhance their financial literacy and change to more welfare-enhancing financial behaviors.

Aside from family relationships, students possess social capital from networks provided by the community, job relationships and school. These could generate the first jobs middle school students can safely take. This gives the occasion to earn money (financial capital) and increase one's human capital as regards personal finance. At the adolescent stage, the influence of peers is felt more strongly.

In sum, financial literacy can be influenced by the assets or capitals (human, financial and social) provided by parents from home, teachers from school, and the students' social network—his peers and in his job. A conceptual flow identifies the factors affecting the enhancement of financial literacy from the viewpoint of an asset- based approach. School-based FLE programs provide human and social assets embedded in the interventions offered to the students in that environment. Parents primarily account for the human assets of a child and provide financial assets as well as social connections. Peers and job relations can impart human assets and social networks, and could be

sources of financial capital as well. Thus, integrating the contributions of human, financial and social capitals would influence the level of financial literacy of a student.

Financial literacy = *f* (HC, FC, SC)

In turn, higher levels of financial literacy are expected to lead to more positive financial attitudes, and in turn, improve welfare-enhancing financial behavior that is required to attain financial well-being. Other determinants could either deter or facilitate an individual's financial behavior (Huston, 2010). For example, even if an eighth grade student knows the benefits of a savings account, she/he cannot open a savings account without money (low income or no job) or without opening a joint account with a parent or legal guardian (for legal and cultural reasons). A student might not be able to make frequent deposits to his/her savings account because he/she could not get a ride as often as she/he wants to go to the bank.

Financial behavior *= f* (financial literacy, intervening factors, external factors)

Thus despite having a certain level of financial literacy, the extent to which financial behaviors are exhibited can vary on account of intervening factors including demographic details (age, gender, and ethnicity), socio-economic status, education, and location. External factors that inevitably affect financial behaviors include macroeconomics, regulation, infrastructure, security and ecological variables (Huston, 2010; Hung, Parker & Yoong, 2009).

3.2 The Dependent Variables

The dependent variables of the student's participation in the FLE programs would be: measures of financial knowledge and skills, financial belief, financial self-efficacy, and welfare-enhancing behaviors. The content of financial knowledge and skills would be based on the FLE modules' scope. There are two types of financial knowledge. One type will directly measure the understanding of financial concepts and their use. The other is of the subjective type, that is, the

individual self-assesses his/her own level of knowledge and skills (Shim, Barber et al., 2009; Courchane & Zorn, 2005, Hung, Parker & Yoong, 2009). The measurement of levels of financial literacy, financial belief, financial self-efficacy and financial behaviors would rely on an estimated sum of indexes with various financial domains (saving, spending, and budgeting). The indexes were devised with a scoring system.

In this study, the financial outcome indicators that will be used to measure the effectiveness of the school-based FLE program are the following:

- Financial literacy levels measured in two dimensions: a) subjectively by the respondents' self-assessment and b) objectively by means of a financial quiz.
- Financial attitudinal indicators measured in two dimensions: a) composite of financial attitudes towards saving regularly, spending within the budget, tracking of expenses and saving/investing for a long-term goal, and b) composite of financial self-efficacy indicators which are respondent to: self-rating of their confidence in managing their money; aware that it affects their future; making financial decisions; their careful use of money; and confidence in achieving financial goals.
- Financial behaviors in this study will focus on: a) spending wisely, b) using a budget, c) tracking of cash flows and d) saving regularly.

3.3 The Independent Variables

The main independent variable is the students' participation in the FLEP. As the treatment (independent variable) of this study, the FLEP participation was conceived as a composite score derived from the conceptualization that the student's financial competence builds up from transmission of human capital (financial knowledge and skills) and social capital (support of peers, teachers and credit union officers). Some indicators are presented in Table 3.1.

Table 3.1

Measures of Human Capital, Financial Capital and Social Capital as Independent Variables

Source	**Indexes**		
	Human Capital	Financial Capital	Social Capital
FLE Program (treatment)	Participation in modules in the FLE program	None	Classmates, other friends in school enhance or muffle learning. Discussions about money Teachers' personal support Other adults involved
Personal and Household (intervening variables)	Baseline financial literacy, belief, self-efficacy and behavior Parent teaching, reinforcement and observed behavior	Savings at home Savings accounts Allowance Cash gifts received Borrowings	Family connection for jobs # social networks – facebook, cell phone # Membership in associations Church attendance
Peers and Job (Intervening variables)	Financial Knowledge and skills from peers and job Other FLE courses and self-learning sources (books, websites etc)	Wages from jobs Loans	Peers' financial behavior Peers' club membership Peers' spending Peers' educational plan Peers have jobs Job connections

The Middle School offers a financial literacy education program to its eighth graders. Modules of the FLE curriculum are integrated in different subjects such as math, social studies and language arts. It includes the classroom-based instruction as well as simulations in Career Investigation and Checkbook Project. The Checkbook Project is essentially a budgeting exercise spanning the entire school year. The third component is the Math Fair which brings the eighth grade students to an off-campus site for about a two-hour simulation of a month's budgeting process set at the simulated condition of the first year of living on one's own with one's first job.

The aim of the FLE program in the Middle School is to improve the eighth graders' financial literacy (knowledge, ability and confidence to effectively apply that knowledge). In turn, financial literacy is assumed to lead to welfare -enhancing financial attitudes and behaviors. Ultimately, all

these lead to financial well-being. In reality, financial well-being is a dimension of asset building which in turn contributes to the quality of life at every life-stage.

Of the four clusters that make up the eighth grade level in the Middle School, one cluster of about 90 students took up a Checkbook Project in their Math class from the beginning of the school year to the end. All the clusters experienced the modules, "Career Investigation" and the Math Fair. Although both the Checkbook Project and the Math Fair were simulations, there were substantial differences. The Math Fair was like a sprint while the Checkbook Project was more like long-distance running. In terms of training and exposure, the Math Fair was an intense two hour exercise in budget allocation, whereas the Checkbook Project provided an academic year-long experience in budgeting, negotiating for an auto loan, bills payment and tracking of income and expenses, and checkbook writing and reconciliation. For this cluster, the Math Fair was their sprint after eight months of training through the Checkbook Project. It was expected that they would gain more from the entire FLEP than students of the other clusters.

3.4 The Research Questions

This led to the following main research questions:

1. To what extent did the FLE program bring about changes in students' financial literacy level, financial attitudes and financial behaviors?
    a. Was there a significant change in financial outcomes between the group that participated in 3 modules and the other that took 2 modules before and after the FLEP?
    b. Did the changes in financial outcomes (financial literacy levels, financial attitudinal indicators and financial behaviors) differ based parental influence? Peer influence? Financial indicators? Having a job outside the home?

c. What were the relationships among the changes in subjective financial literacy levels with changes in financial attitudinal indicators and changes in financial behaviors?

d. What were the intercorrelations among the financial outcomes? What were the correlations between the financial outcomes and the extent of FLEP exposure, parental influence, peer influence, having a job and access to money?

e. To what extent were the financial outcomes of the FLE program mitigated by parental influence, peer influence, access to money and having a job outside the home?

f. What proportion of the financial outcomes could be attributed to each of these: participation in the FLE program, influence of the family, peers, access to money and job outside the home?

2. What were the perceptions of the students and parents about the financial outcomes the financial literacy education program had achieved?

The first research question sought to determine the relative effectiveness of the combinations of FLEP modules in changing financial outcomes. A month after the FLEP, the relative levels and degree of change in financial literacy, attitude and financial behavior of the cluster that took the Checkbook Project was compared to those that did not.

Conceptually, financial outcomes could result from the FLE program, household, the students' personal characteristics and baseline financial literacy, as well as from peers and their jobs. The study examined the extent to which the FLE program accounted for the variation of the outcome, relative to other key determinants driving improvement of financial literacy. In addition, it determined whether the variation in levels of financial literacy, financial attitude and financial behavior were more pronounced for students that took all three FELP modules: Career Investigation,

Math Fair and the academic year-long Checkbook Project, compared to those groups that took two modules: Career Investigation and the Math Fair.

Given that students had access to the same program yet varied in terms of levels in financial literacy, financial attitude and financial behavior, the study investigated what the unique conditions were that made it possible for some of the students to improve in their financial literacy, attitude and behavior, while others did not. This uncovered the determinants that built the financial capability of the participating eighth Grade students in the school-based FLE program.

4 METHODOLOGY

The study is composed of two parts. The first part of the study is an outcome evaluation to determine the effectiveness of this school-based FLEP. The second part of the study is to find out the determinants of financial literacy in this school-based FLEP.

4.1 Research Design Using Mixed Methods

A multi-method approach was used in this study to answer the research questions. To determine the extent to which the FLE program affected a change in levels of financial literacy, financial attitude and financial behavior among the participating students, quantitative and qualitative methods were used. 1) An outcome evaluation was undertaken to compare the levels of financial literacy, financial attitude and financial behavior between the cluster that took three modules and the other clusters that took two. One cluster participated in the Checkbook Project in addition to Career Investigation and the Math Fair, but the other three clusters did not take the Checkbook Project. 2) Qualitative methods were employed to confirm what the outcomes mean to the students and uncover the outcomes that were not considered in the outcome survey. Another set of data from the parents verified the outcomes self-reported by the students. 3) Multivariate regression determined the proportion of the outcomes' variations that could be attributed to the FLE program. It also examined the effects of intervening factors on the financial outcomes.

The mixed methods approach used an explanatory research with priority given to the quantitative data collection and analysis over the qualitative data. The research methods were specified in three sections to correspond to the threefold procedure of the research. Each section identifies their links to particular research questions.

4.1.1 Outcome Evaluation Using Quantitative Methods

The first part of the study is an outcome evaluation. It was intended to capture changes in levels of financial literacy, financial attitude and the extent of students' planned and actual changes in financial behavior after student participation in the FLEP. The research used a type of experimental pretest posttest design, classified under the retrospective pretest design and specifically known as the post-then-pre design (Rockwell & Kohn, 1989). This design has been used in youth financial literacy program evaluation by Danes, Huddleston-Casas & Boyce (1999), Danes & Haberman (2007) and Bateson (2009).

This was considered a natural experimental pretest/posttest design since the eighth grade students of the Middle School were randomly assigned in one of four clusters of the grade level. Each cluster had a different set of teachers. The teachers assigned to the clusters freely chose to implement any of the classroom modules from the FLE program. All of the clusters participated in the Career Investigation module and Math Fair. One cluster added the implementation of the Checkbook Project. The equivalent comparison design was such that the groups were constructed depending on which of the FLE program modules were implemented in the class.

For the intervention groups, the following research design notation distinguishes between the cluster that took three modules (Career Investigation, Checkbook Project and Math Fair) and the other clusters that took only two of the modules (Career Investigation and the Math Fair portion).

Career Investigation + Checkbook Project + Math Fair	R	O_1	$X_{1,2,3}$	O_2
Career Investigation + Math Fair	R	O_1	$X_{2,3}$	O_2

Where: X_1 is Checkbook Project
X_2 is Career Investigation
X_3 is Math Fair

Data was gathered by using a paper and pen survey, using the post-then-pretest design. The first (O_1) and second (O_2) observations were both gathered from the data collection a month after the FLEP had ended. Each group was designated by the modules they took: Checkbook Project (X_1), Career Investigation (X_2) and the Math Fair (X_3).

The student answered two questions. The first question asked the student about their financial literacy and behavior at that point in time. This was the posttest question. Then the student was asked to rate the level of their financial literacy and behavior before the program, relative to what they knew and did at the time of the survey. This second question was the pretest. For the cluster that took all three modules, the pretest question was asked after the 10th month into the Checkbook Project when the participant had sufficient knowledge to answer the question validly (Howard et al., 1979; Rockwell & Kohn, 1989). For the clusters that took only Career Investigation and the Math Fair, they answered this question with their stock financial knowledge, financial attitude and behavior and information derived from other sources and the Career Investigation module and the Math Fair.

The retrospective pretest at the end of the program was preferred over a pretest-posttest design because it was deemed more accurate (Danes, Huddleston-Casas and Boyce, 1999, Davis, 2003). Student-respondents gave answers for the pretest in the same frame of reference as the posttest. If a pretest were administered before the program began, the students' self-report would be assessed differently based on their limited financial knowledge and experience. Most, if not all, the participants still lacked the understanding of financial concepts, with some not knowing the appropriate mathematical operations to use and how to aptly apply them. Thus administering the post then pretest at the end of the program minimized the problem of response shift bias in self-report common in pre-post designs (Howard & Dailey, 1979; Preziosi & Legg, 1983; Rockwell & Kohn, 1989).

4.1.2 Outcome Evaluation Using Qualitative Methods

The outcome evaluation also consisted of gathering qualitative data through open-ended questions through pencil and paper surveys administered to students by their teachers, and a survey sent to parents by the teachers. No focus group discussions (FGDs) with students were carried out. To amplify the findings of the survey's self-reported financial knowledge, attitudinal and behavioral outcomes, data from the parents' survey were used to complement it. The survey sent to parents captured the changes that they had observed in their children during and after the participation in the FLE program. Interviews and an FGD with teachers provided other insights into the intervention and observed outcomes. The qualitative data was used to refine the results of the quantitative analysis by finding the mechanisms of change in financial literacy, financial attitude and behavior that the students experienced.

4.1.3 Multivariate Regression

To examine the factors that affect each financial outcome, a series of multiple regressions were conducted using the data derived from the retrospective post then pre-surveys that the students answered, with their teachers administering them. Regression models were constructed to predict the posttest financial outcome variables: financial knowledge, financial belief, financial self-efficacy and financial behavior. Considering that aside from the FLEP, financial competence can come from and be influenced by different sources, the effects of intervening variables were investigated. The intervening variables that were also gathered through the surveys were used as additional predictors in creating regression models. The objective of the regression analysis was to compare the marginal contribution of the FLE program versus other factors (parents, peers job, access to money and others) that significantly affected financial literacy and behavior. It identified which among the factors used in the measurements affected changes in the financial outcomes.

The statistical model was based on the human capital equation augmented by financial capital variables and social capital variables.

$$\mathbf{Y = \beta_0 + \beta_1\, HC + \beta_2\, FC + \beta_3 SC + \varepsilon}$$

This section involved a multi-step multivariate regression. The dependent variable of the first regression was the level of financial literacy index (HC) consisting of financial knowledge and skills. The independent variables consisted of a human capital index (baseline financial knowledge derived from the family, peers and job), financial capital index (FC, money in savings and that received from parents, gifts, job earnings) and social capital index (SC, relationships with parents, peers and job that are either facilitators or barriers to financial literacy).

For the fifth multivariate regression, the dependent variable was the level of welfare-enhancing financial behavior index, FB (spending, budgeting, tracking, saving-spending ratio) after the FLEP. Financial behavior was set-up as a function of the financial literacy education program (FLEP) score, as well as the other financial outcomes derived from the FLEP (Antecedent variables: post-FELP financial knowledge, belief and self-efficacy), influences by parents (Parent), peers (Peer), access to money (Money) and job (Job) on the students' exhibiting of financial behaviors.

$$\mathbf{FB = \beta_0 + \beta_1 FLEP + \beta_2 Antecedent + \beta_3 Parent + \beta_4 Peer + \beta_5 Money + \beta_6 Job + \varepsilon}$$

Intervening variables had to be controlled to reduce the variability of the dependent variable on account of personal characteristic differences among the students which would bias the results. These variables included baseline financial outcome, antecedent variables, parent influence, peer influence, access to money, and job. This operation revealed the significant predictors of financial behavior.

The error term can be further identified as $\beta_4 FC + \beta_5 HC + \beta_6 SC$. Outside the determinants considered, students could have had other sources of money (FC) which make the application of financial literacy possible. They had human capital (HC) stemming from levels of influence other than

parents, peers and job. They might potentially have access to other financial education programs, the internet, and their financial institutions that also contributed to their financial competence. The analysis determined if the dependent variable differed between degrees of parental and peer influence, having a job, and access to money.

4.2 The Financial Literacy Education Program in 2010-2011

The Middle School is a public school in one of New England's school districts. It has an eighth grade student population of 364, of which 191 (52%) are males and 173 (48%) females. In terms of race, 314 (86%) are White, 50 (15%) are non-whites. Among the eighth grade level population, 122 (34%) are economically disadvantaged students.

In the academic year 2010-2011, the Middle School is offering the FLE Program for the sixth year. Of the FLE Program's three-module in-class topics, teachers chose to offer (1) Career Investigation and (2) Math Fair. One group of teachers also added the Budget and Checkbook Management (Checkbook Project) module. These modules were taught using a combination of traditional classroom lectures, credit union representative presentations and different types of experiential learning through simulations. All the eighth grade students participated in the Math Fair. Simulating a real-life setting, the Math Fair provides students an experience of integrating what they learned from in-class modules around the concepts of "sticking to a budget" and "spending within their means". The Math Fair engaged the students in a hands-on experience of the personal financial management process. At the fair, each student worked on a budget sheet which started off with their calculated take-home pay (monthly salary less taxes) based on their career choice. Under this income constraint, they created a monthly savings and spending plan, allocating for expenses in such items as food, clothing, housing, transportation, insurance, home furnishings, entertainment, student

loan payment and a car loan amortization. Students aimed for a balanced budget and a positive cash balance at the end of the fair.

Participants

Students in eighth grade at the Middle School taking the FLE program in AY 2010-2011 were the subjects of this research. The total population of 364 comprised this grade level.

Students were randomly assigned into four clusters of about 90 each when they registered for this grade level. Each cluster had its own set of teachers in Math, Language Arts and Social Studies. Each teacher decided which combination of modules to teach during the school year.

For the academic year 2010-2011, all clusters took up Career Investigation and participation in the Math Fair. Only one cluster would take the one academic year-long Checkbook Project.

Sampling strategy

The student survey part of the research was opened to involve the entire eighth grade (AY 2010-2011) population of the Middle School. However, teachers chose to exclude students with English language and learning difficulties from taking the survey. Their main reason was the limited participation of these students in the FLEP. During the Math Fair, no focus group discussions were carried out.

Data collection

The teachers of the Middle School administered the retrospective pre and posttest outcome surveys and also shared the post Math Fair surveys. No student performance ratings were shared with this researcher because of privacy issues.

The retrospective survey was administered a month after the Math Fair, that is, when the Checkbook Project ended towards the end of May. The retrospective reference should be the beginning of the school year for those who took the Checkbook Project. For those who did not take it, the reference should be before the Career Investigation module which was before the Math Fair.

Please see Annex A for the indicators and the respective survey questions that were used to gather the information from the students. It was expected that the students who took the Checkbook Project would assess themselves differently from those that did not take it, simply because they were expected to have more knowledge and possibly had enhanced their financial attitudes and behaviors by then.

Qualitative data was collected from the students by including open-ended questions in the post Math Fair survey. These were questions asked by the sponsoring credit union to justify funding and support of the FLEP. No FGDs were conducted with students and parents. Parents answered open-ended questions about their observed changes in their children's financial understanding and behavior after the FLEP. Some of the teachers participated in a focus group to share their observations and views about the FLE program. This will triangulate data collected from the quantitative students' survey.

Instrumentation

Quantitative methods were based on the use of data generated from the retrospective pretest and posttest survey, devised to capture changes in financial literacy, financial attitude and financial behavior. The survey was administered a month after the Math Fair, that is, close to the end of the school year when the Checkbook Project ended. The outcome survey is shown in the Appendix.

The equivalence of the clusters was determined statistically by comparing baseline values of the financial measures. Due to privacy issues, it was not possible to get standardized test scores (proxy for cognitive ability) and percentage of students in the free/subsidized lunch (proxy for SES).

Ethical considerations of the proposed research

The research preserved the required ethical standards of research. The respective teachers of the classes in the Middle School administered the paper surveys to students and took charge of

informing the parents about their children's participation and evaluation of the FLE curriculum. Teachers did not turn over for evaluation surveys of students whose parents denied access to their children's surveys by outside researchers. Names of the respondents were not be revealed in the survey sheets. Only survey numbers properly linked the sets of surveys the students completed. The researcher did not have access to the list that identified the names of the students with their respective survey number. Students were assured of confidentiality, their identity was not revealed in any report and their expressed views did not affect their grades. During the Math Fair, no focus group discussions and student interviews with students were undertaken by this researcher. Parents did not respond to the invitation to participate in a focus group discussion.

4.3 Analyses

The analysis sections of this dissertation would consist of three sections that corresponded to the research methods used.

4.3.1 Analysis of the Outcome Assessment

The outcome assessment used the data from the retrospective posttest then pretest outcome surveys that were used to measure changes in financial outcome variables: financial literacy, financial attitudes and financial behavior before and after the FLE program. Data were presented in Section 5.1 for the entire eighth grade population and in Section 5.3 for each of the FLEP groups.

Financial outcome scales were constructed and presented in Section 5.1.2 based on internal consistency reliability criteria and Cronbach's alpha analysis. The construction of multi-item financial outcome scales provided a more reliable (internally consistent) way to statistically compare and analyze variables than a single item variable (Gliem & Gliem, 2003). This especially applied to the measure of a broad and multi-faceted variable such as financial knowledge, belief, self-efficacy and

behavior. For example, a financial knowledge scale with its constituent items better measures knowledge of a range of topics covered in the FLEP than each item individually.

In the interest of time, the teachers decided to administer one outcome survey instead of giving another one right after Career Investigation but before the Math Fair. They reasoned that these two modules are actually linked and should be assessed together. The analysis in this section answered research questions 1-4.

- Was there a significant change in financial outcomes before and after the FLEP?

  To answer this research question, the analysis, presented in Section 5.1, consisted of performing dependent *t*-tests using SPSS to determine significant changes in the relevant variables measured on Likert scale options, in before and after scenarios. The dependent variables were financial subjective knowledge, financial belief, financial self-efficacy, and financial behavior. In Section 5.3, the same tests were run using data for each FELP group.

- Was there a significant change in financial quiz scores between the group that participated in 3 modules and the others that took 2 modules?

  The relative effectiveness of the FLEP was determined in the analysis shown in Section 7.2.2.1, by comparing the mean differences in financial quiz scores (posttest only) between the groups that took two modules versus the group that took three modules. This was done by conducting a one way analysis of variance (ANOVA).

- Was there a significant change in financial outcomes between the group that participated in 3 modules and the others that took 2 modules?

  In the analysis presented in Section 7.2.2.2, group effect comparisons were done for financial outcomes in knowledge, belief, self-efficacy, and behavior between the group that took three module and the groups that took two modules by conducting a one way

analysis of covariance (ANCOVA), with the corresponding pretest levels of each financial outcome measures as covariates.

- What were the correlations between the financial outcome levels and extent of exposure to the FLE program, parental influence, peer influence, having a job and financial indicators?

  In Section 7.1, measures of association were conducted between each of the dependent variables and the independent variable, participation in the FLE program (treatment). In Section 5.4, measures of association were performed between each dependent variable and each of the intervening variables: parental influence, other peer influence, whether or not the student has a job, access to money such as an allowance; SES proxy (peers' educational plan) and other sources of financial literacy outside of the school.

4.3.2 Qualitative Analysis

As part of the outcome evaluation, qualitative data and analysis which were presented in Chapter 6, consisted of utilizing the open-ended surveys responses of the students and some parents to triangulate the results of the quantitative outcome survey. A variation of content analysis was used in this analysis. Qualitative data were analyzed manually with the aid of word processing software to handle data. This part of the study first looked for statements to determine their fit in the FLEP-financial knowledge-financial attitude-financial behavior conceptual framework. And secondly, to look for other major themes, explore trends and gain more insights both to explain the findings of the quantitative research and discover related leads for future studies. The analysis in this section sought to answer research question #7: What are the perceptions of the students and parents on what financial outcomes the FLE program had achieved?

Qualitative data consisted of short list-like statements derived from open-ended survey responses of the FLEP participants and parents. A word-type approach to content analysis was used. Responses were listed in a word file.

Analysis method

1. The first step was unitizing (Jackson & Trochim, 2002). This meant that if a respondent-generated open-ended survey response consisted of more than one idea, that response was broken down into units of statements or phrases with one idea each. Since the statement units were the units of analysis for this study, this step was key to the sorting step of the analysis where statement units were fitted into a content analysis matrix (Miles & Huberman, 1994) consisting of major themes in columns and categories in rows. Statements were cleared of misspellings and typing mistakes. Statements from the respondents were short sentences or a phrase, and at times not well-constructed. Some statements had negations (e.g., no, not) and qualifiers (e.g., often, very). Adjectives, adverbs and negations in combination with the words they belong to are important and thus retained. Derivatives of the same word were grouped together by major financial category such as save, saving; this is referred to as stemming. Lists of words that mean the same were made as reference to make groupings consistent. For example, setting aside money was the same as saving money. Some statements contained consequences of practicing a good financial habit, in which case an arrow was put towards the consequent phrase. For example, "you need to budget your money → so you won't be broke."
2. The next step referred to a reduction: it removed redundant statements to make the volume of statements manageable for the next steps. These associated statements were labeled with respondent numbers and retained in the database.
3. Sorting consisted of fitting statement units in cells of a matrix consisting of a priori themes (major financial outcomes) as columns and financial category as rows (Miles & Huberman, 1994). The analysis was initially deductive, fitting statement units into pre-

existing major outcomes derived from the logical framework, namely financial knowledge, financial attitudes (belief and self-efficacy) and financial behavior. As in content analysis (K, 1980), the forced major themes answered a specific research question. If statement units did not appropriately fit these initial themes, another one was added. For example, ""Life costs a lot of money" and "Random things can happen to make you lose or gain money" was fitted into an added major theme, "Awareness of financial reality." In later stages, another major theme was added to the matrix that had to do with the student-perceived consequences of financial behaviors. These consequences could be a desirable financial condition that results from positive financial behaviors or undesirable financial conditions that result from negative ones.

The analysis was separate for each of the survey questions. The results of qualitative research were intended to explain the variation in financial literacy, financial attitudes and financial behavior that can be associated with the FLE program. The results partly explained other associations that differ from those predicted. One of the important determinants associated with financial literacy was the students' circumstances, the unique conditions that make it possible for some students to have high levels of financial literacy and welfare-enhancing financial behavior, while others do not. It was expected to provide plausible explanations as to why predicted outcomes did or did not occur. Using mixed methods was expected to provide a better picture of the extent to which the FLE modules work or not work. It revealed the role and mechanisms of the students' personal circumstances in enhancing their own financial competence.

Qualitative analysis was also used to contextualize and explain the mechanisms underlying the correlations (or lack of them) of improvement of financial competence with the enhancements of the students' access to money (financial capital), financial literacy (human capital) and support of

others in his learning (social capital) brought about by participation in the FLE program. It revealed the financial resources, knowhow and social contacts outside of the FLE program. It provided the explanation for how personal traits such as perceptions about the use of money and personal conditions are overcome to make a student more self-sufficient in pursuing goals that often require financial resources. The qualitative data and the patterns that emerged were used to supplement and reinterpret quantitative data gathered from the same setting.

4.3.3 Regression Analysis

Regression analysis used the data from the retrospective pretest and posttest survey. In Section 7.3.1, analysis followed from the construction of regression models to predict significant post-FLEP financial outcomes. The analysis in this section would answer research question 5 and 6.

- To what extent are the financial outcomes of the FLE program mitigated by parental influence, peer influence and having a job outside the home?
- Determine the proportion of the financial outcomes that can be attributed to participation in the FLE program, influence of the family, peers and job outside the home.

On the basis of significant associations and correlations between variables, a regression model is created using a hierarchical method.

The relative contribution of FLEP could not be assessed across groups because of the limitations of the instrument in measuring gradients of the treatment. Thus, only the group that detected the effects of FLEP participations would be analyzed to explain its effect on the financial outcomes.

The regressions conducted on the financial outcomes of the other groups which were insensitive to the measurements of the FLEP participation score were used to explain the effects of intervening variables.

Priority of Quantitative Analysis over Qualitative Analysis

The result of the quantitative analysis was shown first. Qualitative analysis of the data from students and parents were used to confirm and expand the results of the quantitative analysis. The study compared the results from qualitative and quantitative analyses where data explained the same relationships to see if they had similar or dissimilar results (Creswell, 2007). If qualitative analysis did not confirm the results of the quantitative analysis, it was not expanded further. The combined results were complementary.

In the quantitative analysis portion, the use of multiple regressions allowed intervening variables to be controlled so as to determine the proportion of the change in financial literacy outcomes that could be associated with the participation of the student in the FLE program. However, qualitative analysis focused on students' perception of what financial outcomes they had developed. In addition, it revealed the relationships of the various outcomes they developed to ultimately change their financial behaviors.

5 RESULTS OF THE QUANTITATIVE SURVEY

The study seeks to answer two main research questions: **1) To what extent does the financial literacy education program bring about changes in students' financial literacy level, financial attitudes and financial behaviors? 2) What were the perceptions of the students and parents about the financial outcomes the financial literacy education program had achieved?**

Results of the quantitative survey are laid out in this chapter to answer the first main research question. Data from the qualitative surveys are presented in the Chapter 6 to answer the second main research question.

The chapter's four sections contain the presentation and descriptive analysis of this study's relevant quantitative data. These were gathered from the outcome survey that was administered one month after the financial literacy education program (FLEP). Statistical analyses of these data would be utilized to answer the first main research question.

As a matter of sequence, the chapter's four sections focus on the core variables of the study. The first section introduces the financial outcomes, as the dependent variables, which are the expected effects of the FLEP on the students. The second section explains the conceptualization and operationalization of FLEP participation, as the main independent variable. The FLEP represents the middle school's intervention to improve their students' financial literacy. With three FLEP variants implemented by different sets of teachers to distinct groups, the third section examines the resultant financial outcomes by FLEP group. Since the FLEP was conducted in its natural setting over different periods of time, the fourth section shows the effects of other independent variables, called in this study as intervening variables.

Overview of the Variables in each Section

Section 5.1 deals with the FLEP's main financial outcome categories, namely: financial knowledge, financial attitudes, and financial behaviors.

Financial knowledge and skills

Two distinct financial outcome indicators make up this category. One is called objective financial knowledge or simply financial quiz, the 10-item instrument used to measure it a month after the FLEP. The other one is termed subjective financial knowledge or simply financial knowledge, which was measured with the post then pretest survey a month after the FLEP. Financial knowledge is a scale consisting of summated scores of student responses, on a 3-point Likert option, of each of the seven FLEP content aspects that comprise the scale. The financial knowledge scale's reliability for the pretest and the posttest were considered acceptable after a *post hoc* assessment using Cronbach's alpha and inter-item correlation analyses. The financial knowledge scale is made up of students' self-rating of their levels of understanding of the following aspects: cost of loan, net pay, needs and wants, checkbook balancing; factors for car loan and cost of living.

Financial attitudes

This indicator consists of two 5-item scales referred to as financial belief and financial self-efficacy. Both scales had good internal consistency reliability for the pretest and the posttest. Financial belief is composed students' self-rating of their belief towards saving regularly, spending within the budget, using a budget, tracking of expenses and saving/investing for a long-term goal. Financial self-efficacy is the respondents' self-rating of their confidence in their ability to effectively perform the following actions: managing their money that they believe affects their future, making financial decisions, their careful use of money, achieving financial goals and budgeting their money very well.

Financial behavior

This is a 7-item scale constituted to measure spending wisely, budgeting, tracking of cash flows and saving-spending ratio. The composite scale has good internal consistency reliability for the

pretest and the posttest. Changes in savings behaviors were examined separately depending on the source of money: plain allowance, pay from odd jobs, and allowance for chores and cash gifts.

The section concludes that the changes in financial outcomes before and after student participation the FLEP were statistically significant and had varied effect sizes large enough to be useful in reality. Benefiting 90% of students, the gain in subjective financial knowledge was observed to have a very large practical significance. Close to two thirds of the students reported positive changes in financial beliefs and financial self-efficacy in which calculated effect sizes were considered large. About half of the students posted improvements in financial behaviors with an overall moderate effect size. On specific behavioral subscales, a third of the students reported improvements in budgeting, tracking cash flows and their saving spending ratio. Progress in spending wisely registered the highest percentage of students (39%) reporting gains in this aspect. Savings behavior improved significantly with gifts and money earned but not for plain allowance.

Section 5.2 introduces the independent variable, FLEP participation score, its conceptualization and how it was measured. The variable is a composite score derived from the conceptualization that the student's financial competence builds up from transmission of human capital (financial knowledge and skills) and social capital (support of peers, teachers and credit union officers). Based on student self-rating of their participation in the FLEP's modules offered to them, three FLEP variants were identified, namely: Two Module, Two+ Module and Three Module. The group of students who participated in the simple Career Investigation and exposed to the Math Fair was denoted as "Two Module." The group that took part in the enhanced version of Career Investigation and the Math Fair were referred to as "Two+ Module." The group that experienced the enhanced version of Career Investigation, the Math Fair and the Checkbook Project were named "Three Module."

Section 5.3 examines the estimated effectiveness of each FLEP in changing financial outcomes. The proportion of students that reported gains are also shown. Results of the analysis indicate that each FLEP variant increased financial knowledge to a very large degree, improved financial belief and self-efficacy to a large extent, and financial behavior to a moderate level.

Section 5.4 presents the intervening variables that provided some context about factors outside of the FELP that also influenced the students' financial competence. These factors included parental and peer influence, access to money, having a job and other sources of financial literacy. Parental influence had the strongest positive correlation to the student's financial literacy and behavior. Having savings at home was a more positive influence on financial competence than maintaining a savings account possibly because students had more control over it. Money earned had a stronger positive influence of financial competence outcomes than money simply handed out to them. Socioeconomic status was positively associated with financial knowledge but negatively related to financial behavior possibly because wealthier student were less compelled to get a job and it is having a job that seems to improve financial competence.

The eighth grader respondents

The middle school where the Financial Literacy Education Program (FLEP) was implemented is one of the public schools in New England. A demographic description of the school's eighth grade students was published by the New England Common Assessment Program (NECAP) for the academic year 2010-2011. There were 52.2% males and 47.5% female students. Racial origins could be divided into 86% White and the others include Asian, Black and Hispanics. One third are economically disadvantaged students and the school is receiving Title I services to provide for 11% of the students eligible for this program.

The FLEP modules were incorporated in math, social studies and language arts. To participate in the Math Fair and the Checkbook Project, parents' approval was required. Thus, a total 345

students participated in the FLEP, representing 95% of the NECAP total. Class sections were divided into four clusters, each with its own set of teachers who decided which FLEP modules to implement.

Only the students who were present at the time that the teachers administered the outcome survey completed it. Those who were absent that day were not surveyed. Also, teachers did not include the students with limited English proficiency (LEP) and others with learning difficulties. The term LEP "refers to students whose home language is one other than English and whose inability to speak, read, understand, or write in English impedes upon their education in such a way that they are unable to effectively participate in the educative process." LEP students and some of the students with learning disabilities did not participate consistently in all aspects of the FLEP and other pre and post surveys given for each module. They were instead involved in special programs of the school.

Table 5.1

Number of Students Who Participated in the FLEP and the Outcome Survey

Cluster Number	Total Number of Students	Surveys not administered	Surveys excluded from analysis	Reported non-participation in any of the FLEP Modules	Completed all of cluster modules and outcome survey
1	83	24*	2	3	54 (65.1%)
2	86	9	8	5	64 (74.4%)
3	87	9	12	5	61 (70.1%)
4	89	17	1	5	66 (74.2%)
TOTAL	345	59	33	18	245 (71.0%)

Note: *LEP students and those who were absent

Of the total accomplished surveys received, 51 surveys were excluded in the analysis, as indicated in Table 5.1. These were surveys of students whose parents opted out of the study, those that were not properly answered, and where non-participation in any one of the FLEP group modules was reported. The data used in this study were derived from the remaining 245 surveys, 71% of total FLEP participants who reported completing all of the FLEP modules offered by their teachers for their respective groups. This allowed for a comparative evaluation across groups of students receiving different FLEP module combinations.

5.1 Financial Outcomes

In this study, effectiveness of the school-based financial literacy education program (FLEP) was measured by comparing the changes in the levels of following financial outcomes (***dependent variables***):

Financial knowledge levels were measured in two dimensions:

a) objectively by means of a financial quiz, and
b) subjectively by the respondents' self-assessment of their financial knowledge and skills in seven content areas that were constituted in a composite score. The content areas include: cost of loan, net pay, needs and wants, checkbook balancing; factors for car loan and cost of living.

Financial attitudinal indicators were measured in two dimensions:

a) composite of financial beliefs towards saving regularly, spending within the budget, using a budget, tracking of expenses and saving/investing for a long-term goal, and
b) composite of financial self-efficacy which were the respondents' self-rating of their confidence in their ability to effectively perform the following actions: managing their money that they believe affects their future, making financial decisions, their careful use of money, achieving financial goals and budgeting their money very well.

Financial behaviors in this study focused on

a) composite of financial behaviors in spending wisely, using a budget, tracking income and expenses and savings/spending ratio; and,
b) savings behavior based on their sources of money: plain allowance, pay from odd jobs, allowance for chores and cash gifts

5.1.1 Descriptive Statistics of the Financial Outcomes Based on the Outcome Survey

5.1.1.1 Objective financial knowledge

The students' objective financial knowledge was measured through a financial quiz. The ten-item multiple-choice financial quiz specifically included topics covered by the FLEP. This was conducted only as a post test. Scores were simply the number of correct answers, thus, higher scores indicated greater financial knowledge. The distribution of scores is shown in Table 5.2. Out of a perfect score of 10, the students' mean score was 5.2 (*SD* = 1.68). In Section 5.3.1, financial quiz scores are calculated by FLEP group to examine its association with extent of FLEP participation.

Table 5.2

Frequency Distribution of Financial Quiz Score

	Distribution			
Financial Quiz Score	Number	Percentage	*M*	*SD*
0-2	10	4.1		
3-4	77	31.4		
5-6	101	41.2		
7-8	49	20.0		
9-10	6	2.4		
Total N	243	99.2		
Overall financial quiz			5.21	1.68

Note: Total percentage was less than 100 because of missing data

5.1.1.2 Subjective financial knowledge

Participants of the FLEP were expected to increase in knowledge in certain topics after participating in the modules. Seven of these topics comprised the variable "subjective financial knowledge" and these items are listed in Table 5.3. Across each of the seven topics, the summary table also contains the proportion of total respondents by level of knowledge. The response options were selected from a 3-point Likert scale: 1 = *No idea, 2 = Know it somewhat, and 3 = Know it well.* The mean and standard deviation for each of the knowledge questions before and after the program are also shown.

Table 5.3

Mean, Standard Deviation and Percentage Distribution of Financial Subjective Knowledge Items by Response Option after and before the Financial Literacy Education Program

Financial knowledge topics (subjective)		Levels of Financial Knowledge			*M*	*SD*
		No idea	Know it somewhat	Know it well		
		Percentage of *N* = 245				
Cost of loan	Now	11.8	42.9	45.3	2.33	0.68
	Before	46.9	38.8	14.3	1.67	0.71
Calculate net pay	Now	21.2	38.4	40.4	2.19	0.76
	Before	62.9	28.6	8.6	1.46	0.65
Create budget	Now	10.6	31.8	57.6	2.47	0.68
	Before	36.7	40.4	22.9	1.86	0.76
Need and want	Now	4.1	7.8	88.2	2.84	0.47
	Before	11.8	27.3	60.8	2.49	0.70
Balance checkbook	Now	28.2	37.6	34.3	2.06	0.79
	Before	51.4	38.8	9.8	1.58	0.66
Factors for car loan	Now	32.2	43.3	24.5	1.92	0.75
	Before	67.3	26.5	6.1	1.39	0.60
Cost of living	Now	3.3	25.3	71.4	2.68	0.53
	Before	24.1	49.0	26.9	2.03	0.72

Recall that respondents used their level of understanding at the time they took the survey as a reference point to gauge the level of their knowledge before the FLEP. Effectiveness of the FLEP could be indicated by observing the proportion of students shifting from *No idea* about a topic to *I know it well* and the differences in scores before and after the FLEP.

As seen in Table 5.3, the proportion of students in the *No idea* column decreased in each of the knowledge items after the FLEP, as it rose in the *I know it well* column. The biggest student percentage reduction in the *No idea* column was on the topic "calculate net pay" where 63% had *no idea* before the FLEP, then down to 21% after the FLEP. The next biggest dips in percentage of students were in "factors for car loan" and "cost of loan" which both dipped by 35%. Under the *Know it well* column, the highest rise (45%) in student percentage after the FLEP was in the topic "cost of living" and next was in the topic "create budget" at 35% increase. These general trends of more students shifting towards a better understanding of the financial knowledge topics suggested a positive effect of participation in the FLEP.

As observed in Table 5.3, there is a consistent rise from the pretest mean to the posttest mean in each of the financial knowledge topics asked. By conducting dependent *t*-tests (paired *t*-test in SPSS), these knowledge gains were found to be statistically significant to the $p < .001$ level, as shown in Table 5.4. In addition, the table contains the percentage of the students who reported their knowledge gains for each item that composed financial knowledge a month after participation in the FLEP. Thus the hypothesis that the difference between the pretest and posttest means was zero should be rejected. Hence, these increases in financial knowledge were unlikely due to chance, and indicative of FLEP's effectiveness.

Table 5.4

Changes in Financial Knowledge

Financial Knowledge	Reported Gain (% of N=245)	Mean Difference			*t*(*df*)	Sig (2-tailed)
		Posttest-Pretest	Std. Deviation	Std. Error Mean		
Knowledge (subjective)						
Cost of loan	59.6%	0.66	0.71	0.05	14.58 (244)	0.000
Calculate net pay	61.2%	0.73	0.78	0.05	14.68(244)	0.000
Create budget	55.5%	0.61	0.72	0.05	13.23(244)	0.000
Needs and wants	33.1%	0.35	0.62	0.04	8.86(244)	0.000
Balance checkbook	42.8%	0.48	0.67	0.04	11.18(244)	0.000
Factors for car loan	47.8%	0.53	0.68	0.04	12.30(244)	0.000
Cost of living	60.0%	0.65	0.74	0.05	13.82 (244)	0.000

Among the topics asked in the outcome survey, "calculate net pay", "cost of living", and "cost of loan" recorded the highest percentage of students who posted knowledge gains in them. The same items had the largest raw score gains and the highest *t*-statistic values. The lowest change was observed in the aspect of "needs and wants." Student comments about "net pay" had to do with the effect of taxes. Some student realized that "taxes take away a lot of money!" Another surprise concerned facing the actual "cost of living," as one student commented: "Life costs a lot of money!" One student expressed the surprise of many with the statement: "How costly these necessities can be!" Students learned about the cost of loans from allotting the amounts of

amortization for their car loans and student loans. A student wrote: “Student loans take a while to pay off and are expensive**.”**

Could the magnitude of improvement in financial knowledge be a reflection of student ability? To answer this question, the distribution in self-reported pretest knowledge levels, shown in Table 5.3 was examined. The pre- FLEP levels in “calculated net pay” indicated that 63% of the students had *no idea,* 29% *know it somewhat* and only 9% *know it well*. After the FLEP, the change in distribution was 21%, 38% and 40%, respectively. In this case, the highest percentage of students (61%) may have posted knowing this item better after FLEP exposure, but only 40% *know it well*.

In the case of “needs and wants,” 61% of the students reported that they already *know it well* before the FLEP, 27% *know it somewhat* and 12% *no idea.* After the FLEP, the distribution shifted to 88%, 8% and 4%, respectively. There may have been fewer students (33%) who reported improvements in knowing this item after the FLEP but 88% *know it well*. Thus, the change in raw score was evidently not a reflection of the student’s level of ability. The average change in knowledge could be big while the average level of understanding remains lower than optimal. The reverse is true. As it was apparent in this case, the change in knowledge after the FLEP depended on existing knowledge levels. Because the pretest level affected the variance in the posttest, it had to be taken into consideration in estimating the proportion of the posttest variance that could be attributed to FLEP participation. Hence at this point, it was not assumed that the raw score gains were entirely due to FLEP participation.

In Section 7.2.2.2 where the comparative effectiveness of varying FLEP exposures per group would be examined, the effect of the FLEP on students’ financial outcomes would be more accurately determined by controlling for pretest levels. This would be done by conducting an analysis of covariance (ANCOVA) instead of analysis of variance (ANOVA) on mean differences.

5.1.1.3 Financial attitudes

Two dimensions comprised financial attitudes. One dimension was financial belief or the importance students give to matters pertaining to personal finance. The other dimension was referred to as financial self-efficacy or the confidence in their abilities to effectively perform behaviors that deal with money.

In theory, students were expected to improve in financial belief after an increase in knowledge about financial concepts and their relation to financial well-being. As a potential effect of increase in financial knowledge, five financial belief items were measured in this study. Table 5.5 shows the five financial belief items and the corresponding percentage distribution of responses according to these 5 response options: 1= *Not at all important,* 2 = *A bit important,* 3 = *Moderately important,* 4 = *Quite important and* 5 = *Very important.* The summary table also shows the mean and standard deviation for each of the items before and after the program.

Table 5.5

Mean, Standard Deviation and Percentage Distribution of Financial Belief Items by Response Option After and Before the Financial Literacy Education Program

Financial Belief Items		Levels of Financial Belief: Not at all important	A bit important	Moderately important	Quite important	Very important	*M*	*SD*
		Percentage of *N*=245						
Saving regularly	Now	0.8	2.9	9.4	25.3	61.2	4.44	0.84
	Before	4.9	9.0	23.3	26.5	35.5	3.79	1.17
Spending within budget	Now	0.4	2.0	6.5	19.6	71.4	4.60	0.74
	Before	2.0	7.3	15.1	29.8	45.3	4.09	1.04
Savings for long term goals	Now	1.6	1.6	16.3	32.7	47.8	4.23	0.90
	Before	5.3	10.0	25.3	29.8	28.6	3.67	1.15
Using a budget	Now	0.4	1.2	14.3	25.7	58.4	4.40	0.81
	Before	2.9	9.4	22.9	29.8	34.3	3.84	1.09
Tracking expenses	Now	3.3	3.7	14.3	28.6	50.2	4.19	1.03
	Before	6.1	14.0	25.7	25.7	27.8	3.56	1.21

In each of the financial belief items, it was observed that students reported having more positive financial attitudes after the FLEP. The proportion of students in the *Very important* and *Quite important* columns increased, as the proportion in *Not at all important* and *A bit important*

columns decreased after the FLEP, indicating a more positive stance in financial beliefs than before the program. Before the FLEP, the students gave the least importance average rating to "tracking expenses" (*M* = 3.56) and the highest to "spending within the budget" (*M* = 4.09). After the FLEP, the students gave "tracking of expenses" the lowest important average rating (*M* = 4.19) and "spending within the budget" the highest (*M* = 4.60).

Students' comments about their learning outcomes in this regard exemplify the statistical findings. One student noted that "living within your means is a valuable skill." Concretely, there is "the need to make a plan for your dollars [a budget] so you won't be broke," wrote another. To stick to the budget, another student emphasized the "need to watch how much you spend," in other words to track expenses.

But note that before the FLEP, a high proportion of students had not rated any of these aspects of financial belief lower than 3.5, somewhere between *moderately important* and *quite important.* This fact caused the ceiling effect, made more pronounced in the posttest where many more students rated their financial belief mostly in the upper limit of the financial belief scale. Although raising the students' financial beliefs was a desirable outcome, statistically the reduction of variance due to the ceiling effect also masks the detection of correlations with the treatment variable.

The other dimension of financial attitude was financial self-efficacy which itself was expected to be enhanced with the increase in financial knowledge and a more positive financial belief. Table 5.6 presents each of the financial efficacy items and the corresponding percentage distribution according to the five-point response options: 1= *Not at all true of me,* 2 = *A bit true of me,* 3 = *Halfway true of me,* 4 = *Mostly true of me and* 5= *Very true of me.* In addition, the summary table also lists the mean and standard deviation for each of the self-efficacy items before and after the program.

Table 5.6

Mean, Standard Deviation and Percentage Distribution of Financial Self-Efficacy Items by Response Option After and Before the Financial Literacy Education Program

Financial Self-efficacy Items		Levels of Financial Self-efficacy						
		Not at all true of me	A bit true of me	Halfway true of me	Mostly true of me	Very true of me	*M*	*SD*
		Percentage of *N*=245						
Manage money that affects future	Now	2.4	4.9	8.2	21.6	62.4	4.37	1.00
	Before	7.8	12.7	16.7	24.5	37.6	3.72	1.30
Make good financial decisions	Now	3.7	6.1	11.4	38.4	40.0	4.05	1.05
	Before	10.6	11.0	24.5	30.6	22.4	3.44	1.25
Use money carefully	Now	6.9	7.8	19.6	32.2	33.1	3.77	1.19
	Before	15.9	17.6	22.9	22.9	20.0	3.14	1.36
Achieve financial goals	Now	6.5	14.7	22.4	26.1	29.8	3.58	1.24
	Before	15.5	19.2	21.6	24.1	18.8	3.12	1.35
Budget well	Now	9.8	7.3	22.0	31.4	29.0	3.63	1.25
	Before	18.4	19.6	20.4	23.3	17.6	3.02	1.37

The table shows that participants reported stronger self-efficacy levels in all of the items where a greater proportion of students posted *Very true of me* and *Mostly true of me* after the program than before it. Before the FLEP, most of the students' highest rating was on their confidence in their ability to "manage money that affects their future" (*M* = 3.72) and the lowest rating for their ability to "budget well" (*M* = 3.02). After the FLEP, a larger percentage of students' highest ratings was on their confidence in their ability to "manage money that affects their future" (*M* = 4.37) and the lowest ratings for their ability to "achieve financial goals" (*M* = 3.58).

After the Math Fair, a student felt more confident in his/her ability to budget by writing about "the feeling of accomplishment that you get from finishing the [Math Fair] without owning money." Another realized that "it is very possible to live within your means." But more students faced their doubts in their abilities to prudently use money. One wrote: "When you have total access money can go very fast." Several students revealed: "It is hard to save money." The FLEP module simulations could be considered the setting in which students were given the opportunity to

strengthen self-efficacy through mastery experiences, as stipulated by Bandura (1994). Successes build stronger self-efficacy whereas failures challenge it.

As can be seen from Tables 4.6 and 4.7, the raw mean scores of the posttests were consistently higher than those of the pretest for each of the items comprising financial belief and self-efficacy. These improvements in financial attitudes were found to be significant to the $p < .001$ level after conducting dependent *t*-tests for each item. Thus the hypothesis that the difference between the pretest and posttest means was zero should be rejected. Hence, improvements in all the aspects comprising financial belief and financial self-efficacy did not likely occur by chance. Table 5.7 also shows the results of the *t*-tests and the percentage of the students who reported raw score gains for each item that made up financial attitudes, a month after participation in the FLEP.

Table 5.7

Changes in Financial Attitude (Beliefs and Self-efficacy)

Financial Belief and Self-efficacy Items	Reported Gain (% of N=245)	Mean Difference			*t*(*df*)	Sig (2-tailed)
		Posttest-Pretest	Std. Deviation	Std. Error Mean		
Financial Belief						
Saving regularly	44.0%	0.64	0.90	0.06	11.18 (242)	0.000
Spending within budget	35.5%	0.50	0.85	0.05	9.28 (243)	0.000
Saving for long term goals	42.8%	0.57	0.95	0.06	9.41 (242)	0.000
Using a budget	42.4%	0.57	0.87	0.06	10.30(242)	0.000
Tracking expenses	44.5%	0.63	1.04	0.07	9.49(242)	0.000
Financial Confidence						
Manage money that affects future	43.3%	0.65	0.98	0.06	10.37 (242)	0.000
Make good financial decisions	40.4%	0.62	0.98	0.06	9.84(242)	0.000
Use money carefully	43.6%	0.63	0.92	0.06	10.75 (242)	0.000
Achieve financial goals	35.4%	0.47	0.74	0.05	9.80(242)	0.000
Budget well	40.4%	0.60	0.92	0.06	10.19 (242)	0.000

5.1.1.4 Financial behavior

Financial behaviors were composed of welfare-enhancing actions that deal with money. The notion of welfare refers to a general state of economic well-being (Sherraden, 1991; Huston, 2010). It is expected that an increase in financial knowledge, a change to more positive financial belief and an

enhancement in self-efficacy, would lead to an improvement in financial behavior (Shim, Xiao et al., 2009).

In the current study, welfare-enhancing financial behavior was measured on a composite multidimensional scale. Three of the four dimensions consisted of 2-item subscales for spending wisely, budgeting, and tracking of cash flow. To the three subscales was added the "saving-spending ratio" which was the respondents' estimate of the fraction of the money they immediately save relative to what they spend when they receive, earn money, or have money at their disposal.

The items that comprise spending wisely, budgeting and tracking of cash flow are listed in Table 5.8.

Table 5.8

Mean, Standard Deviation and Percentage Distribution of Financial Behavioral Items by Response Option After and Before the Financial Literacy Education Program

Financial Behavioral Subscale Items		Frequency of Financial Behavior Percentage of *N*=245						
		Almost never	Seldom do	About half the time	Very often	Almost always	*M*	*SD*
Spending								
Compare prices	Now	16.7	14.3	24.9	20.0	24.1	3.20	1.39
	Before	29.0	17.1	18.0	17.1	18.8	2.80	1.49
Impulse buying (reverse)	Now	5.7	12.7	24.1	28.6	29.0	3.62	1.19
	Before	9.0	13.9	24.1	28.6	24.5	3.46	1.25
Wait for sales	Now	24.1	18.8	23.7	18.8	14.7	2.81	1.38
	Before	32.2	20.8	22.0	16.3	8.6	2.48	1.32
Budgeting								
Create budget	Now	40.4	20.4	20.8	12.7	5.7	2.23	1.26
	Before	54.7	17.6	16.7	7.3	3.7	1.88	1.15
Stick to budget	Now	32.2	14.7	15.9	23.3	13.9	2.72	1.47
	Before	42.4	13.9	15.5	18.4	9.8	2.39	1.43
Tracking								
Track income & expenses	Now	30.6	21.2	18.8	16.7	12.7	2.60	1.40
	Before	42.4	24.5	12.2	13.1	7.8	2.19	1.32
Track expenses	Now	37.6	18.8	20.4	14.7	8.6	2.38	1.34
	Before	49.0	15.1	16.3	13.9	5.7	2.12	1.31

Students indicated along a 5-point Likert scale how often they engage in these financial behaviors from 1= *almost never* to 5= *almost always*. Of the financial behaviors' outcomes, "Impulse buying" was reverse- coded to make the lowest score reflect positive behavior. The distribution of responses, the mean and standard deviation of the items that comprise each dimension are also shown.

In general, financial behavior improved after FLEP participation as indicated by the rise in the proportion of student ratings under *very often* and *almost always*, as proportions decreased for *almost never* and *seldom do*. Mean rating values increased after the FLEP as did financial knowledge and attitudes.

The saving-spending ratio is a measure of savings behavior relative to spending at the time money was received. Students were asked: "When some kids get money, they spend it right away. Other kids want to save their money. What about me?" They reported their usual behavior by selecting one of five response options: 5 = I usually save all my money right away; 4 = *I usually save most of my money*; 3 = *I usually spend half of my money*; 2 = *I usually spend most of my money*; and 1 = *I usually spend all my money right away.* The distribution of responses is found in Table 5.9.

Table 5.9

Mean, Standard Deviation and Percentage Distribution of Saving-Spending Ratio by Response Option After and Before the Financial Literacy Education Program

	Response Options Percentage of *N*=244						
Saving-Spending Ratio	I usually spend all my money right away	I usually spend most of my money	I usually spend half of my money	I usually save most of my money	I usually save all my money right away	*M*	*SD*
Posttest	5.70	9.40	20.90	37.30	26.60	3.70	1.13
Pretest	11.90	16.40	25.00	30.30	16.40	3.23	1.25

Savings-spending ratio increased after the FLEP as indicated by the rise in the proportion of responses under the *I usually save all my money* and *I usually save most of my money* columns and as the percentage of responses decreased under *I usually spend all my money right away* and *I usually spend most of my money* columns. Likewise, a positive mean difference between the posttest and the pretest, indicate an improvement in saving relative to spending money right away.

Changes in financial behavior for the items comprising spending wisely, budgeting, tracking of cash flows and saving-spending ratio were calculated using raw mean data from Tables 4.9 and

4.10. The respective dependent *t*-tests were conducted and the results summarized in Table 5.10. The table also presented the percentage of the students who reported raw score gains for each given aspect of financial behavior a month after participation in the FLEP.

Table 5.10

Mean differences, Standard Deviation for Items Comprising Financial Behaviors

Financial behavior	Reported Gain	Mean Difference			*t (df)*	Sig (2-tailed)
		Posttest-Pretest	Std. Deviation	Std. Error Mean		
Spending (*N*=245)	**43.7%**					
Compare prices	31.0%	0.41	0.76	0.05	8.40 (244)	0.000
Impulse buying (reverse)	20.7%	0.17	0.77	0.05	3.41 (244)	0.001
Wait for sales	25.7%	0.33	0.71	0.05	7.25 (244)	0.000
Budgeting (*N*=245)	**30.2%**					
Create budget	26.1%	0.35	0.77	0.05	7.16 (244)	0.000
Stick to budget	23.2%	0.33	0.79	0.05	6.44 (244)	0.000
Tracking (*N*=245)	**31.8%**					
Track income & expense	27.7%	0.40	0.77	0.05	8.26 (244)	0.000
Track expenses	22.0%	0.26	0.72	0.05	5.58 (244)	0.000
Ratio of saving and spending	**33.1%**	**0.47**	**0.97**	**0.06**	**7.52 (243)**	0.000

It can be observed that the percentages of students who reported financial behavior improvements were less than those who posted gains in financial knowledge and attitudes. The magnitude of the change was also lower. This observation was expected because there would be a time lag before behavioral changes would be adopted after an increase in knowledge and attitude. One of the parents noted: "importance of saving for the future is understood but the execution is lacking." However, there more parents statements about their child's changes in behavior such as "spending less money on "wants", more on "needs" and "saving and monitoring spending."

5.1.1.5 Changes in savings behavior

Measuring changes in savings behavior was done differently. Previous studies had found that middle school children saved more money from what they earned than from what they did not. In this study, savings behavior was examined for four sources of money: plain allowance, odd jobs,

allowance for chores, and gift money. Plain allowance was money received regularly from parents/guardians with no chores required to get it. Pay for odd jobs were wages for job(s) outside the house. Allowance for chores was money received for performing house work. Gift money was presents in cash or cash equivalents.

Students were asked about the relative proportion they set aside of the money they received from each specific source. The respondents chose from 6 response options from 1 = *almost none of it*, 2 = *less than half of it*, 3 = *about half of it*, 4 = *most of it* to 5 = *almost all of it*. If the student did not get money from a specified source, he/she marked it 0 = *I don't get this type*. There is a limitation in using these five response options in measuring changes in savings behavior. In fact, it was not possible to detect small changes in saving money. For example, if a student had been saving 10 percent of his/her allowance before the FLEP and then increased savings to 20%, he/she could only select *less than half of it* for the pretest and posttest. Thus even with a 100% increase in savings, it was undetected by the instrument. The percentage distribution of student ratings as well as the mean and standard deviation for saving behavior per source of money are shown in Table 5.11. The mean was calculated only for those who received money from a specific source.

Table 5.11

Mean, Standard Deviation and Distribution of Savings Behavior by Response Option After and Before the Financial Literacy Education Program

Source of money		Relative Proportion of Saving Percentage of *n*						
		Almost none of it	Less than half of it	About half of it	Most of it	Almost all of it	*M*	*SD*
Plain allowance	Now	35.8	10.2	18.2	17.5	18.2	2.72	1.54
(*n*=137, 56% of *N*)	Before	37.2	14.6	16.8	14.6	16.8	2.59	1.52
Pay for odd jobs	Now	25.2	9.1	18.9	17.5	29.4	3.17	1.56
(*n*=143, 58% of *N*)	Before	28.9	17.6	16.9	11.3	25.4	2.87	1.57
Allowance for chores	Now	18.0	14.5	19.2	23.8	24.4	3.22	1.43
(*n*=172, 70% of *N*)	Before	25.0	14.5	24.4	17.4	18.6	2.90	1.44
Money gift	Now	12.5	14.2	18.3	21.7	33.3	3.49	1.40
(*n*=240, 98% of *N*)	Before	18.8	16.3	16.7	18.3	30.0	3.25	1.50

Note: *n* represents the total number of respondents who receive money from specified sources. The means were calculated based on these total numbers.

In general, student distribution shifted towards saving *most of it* and *almost all of it* after FLEP participation as well as a decrease for *almost none of it* and *less than half of it*, compared to student distribution before the program. The positive change in savings behavior per income source was also evident since the posttest mean scores were higher than those of the pretest.

Before the FLEP, savings behavior for allowances was first compared. Respondents saved more of their allowance for chores (M = 2.90, SD = 1.44) than they would plain allowance (M = 2.59, SD = 1.5). After the FLEP, improvements in savings was much greater for allowance for chores (M = 3.22, SD = 1.43) than plain allowance (M = 2.72, SD = 1.54).

In terms of money students worked for, the mean proportion of money saved by students who got paid for odd jobs and those who got an allowance for chores were comparable. But among the sources of money, the highest proportion of money saved was exhibited by those who got cash gifts, (M = 3.25, SD = 1.50 for pretest; M = 3.49, SD = 1.40 for posttest).

Another indication of change in savings behavior was displayed by the students who did not save money prior to the FLEP: 37% for plain allowance, 29% pay for odd jobs, 25% allowance for chores and 19% gift money. After the FLEP, these proportions of non-savers decreased. The biggest percentage dips were 7% for allowance for chores and 6.3% gift money. These results were confirmed by students' comments such as the following: "Even though I don't save money but it helped me change my mind on how I was going to save money." Parents attest that their children are "starting to save money."

Mean differences in savings behavior

Using raw pretest and posttest data from Tables 4.12, mean differences were calculated for each savings behavior corresponding to money received from plain allowance, pay from odd job, allowance for chores and money gift. The respective dependent *t*-tests were conducted and the

results are shown in Table 5.12. The table also lists the total number of students that receive money from a given source, on which total the percentage of student-reported gain was based.

Table 5.12

Mean differences, Standard Deviation for Items Comprising Savings Behaviors by Source of Income

Financial behavior	Reported Gain	Mean Difference Posttest-Pretest	Std. Deviation	Std. Error Mean	*t (df)*	Sig (2-tailed)
Saving (N=242 or 99%)	**29.3%**					
Plain allowance (n=137 or 56%)	17.5%	0.13	0.92	0.08	1.67 (136)	0.098
Pay from odd job (n=142 or 58%)	21.8%	0.30	0.76	0.06	4.56 (141)	0.000
Allowance for chores (n=172 or 70%)	24.6%	0.32	0.77	0.06	5.32 (171)	0.000
Money gift (n=240 or 98%)	20.8%	0.25	0.79	0.05	4.83 (239)	0.000
Change to longer term goal	**22.4%**	**0.25**	**0.85**	**0.06**	**4.62 (239)**	0.000

Note: Reported Gain are percentages of total number of students that receive money from a given source.

Results in Table 5.12 show that students whose income came from plain allowance, posted a non-significant slight increase in savings behavior by $M = 0.13$, $SD = .92$, $t(136) = 1.67$, $p = .098$. In contrast, savings behavior significantly improved for odd jobs' wages ($M = 0.30$, $SD = .76$, $t(141) = 4.56$, $p < .001$) and allowance earned for doing chores ($M = 0.32$, $SD = .77$, $t(171) = 5.32$, $p < .001$).

These results indicated that the students save more of money that they have worked for than plain allowance as was found in the literature. Koonce, et al.'s (2008) research on a group of children ($M = 15$ years old) also showed a significant association of savings behavior for earnings but not for allowance. Doss, Marlowe & Godwin (1995) in their study on the sources and uses of money by middle school students (83% were 11-13 years of age) found that the level of savings was associated with the amount of money they earned but not with allowances and gifts, nor personal characteristics and family situation. However, in this study, savings from gifts increased significantly.

5.1.2 Creation of Financial Outcome Scales

The construction of multi-item financial outcome scales provided a more reliable (internally consistent) way to statistically compare and analyze variables than a single item variable (Gliem & Gliem, 2003). This especially applied to the measure of a broad and multi-faceted variable such as

financial knowledge, belief, self-efficacy and behavior. For example, a financial knowledge scale with its constituent items better measures knowledge of a range of topics covered in the FLEP than each item individually. It also made analysis less cumbersome than if individual items were used.

An acceptable multi-item scale must possess internal consistency reliability. In this study, 'internal consistency' of an outcome scale referred to whether participants responded to the items that made up the scale in a consistent manner in a single administration (Spiliotopoulou, 2009). This was determined by assessing the degree to which the items that comprise a scale were intercorrelated (Cortina, 1993). On this depended the reliability of the scale, i.e., its ability to measure a specific outcome in a consistent manner.

The widely used index to assess internal consistency reliability is Cronbach's alpha. However, since this measure is a function of the number of test items and the average intercorrelation among the items comprising the scale, it is possible to attain a high alpha value by having either many items or highly intercorrelated items (or some combination of the two) (Clark & Watson, 2005). Thus, to better gauge the internal consistency of scales in this study, three related characteristics of the data were also considered, namely, (1) inter-item correlation, both the range and the mean, (2) corrected-to-total subscale correlation and (3) coefficient α if item deleted. Cronbach's alpha and these three characteristics of the data were part of the SPSS output of reliability analysis.

Inter-item correlation refers to the bivariate Pearson correlation coefficients between items. The range of the scale's mean inter-item correlations was suggested to fall within an acceptable range of .15 to .20 for measuring a broad higher order construct such as the subjective financial behavior. But a higher mean intercorrelation range between .40-.50 for a narrower construct such as spending wisely (Clark & Watson, 1995; Spiliotopoulou, 2009). Considered a direct measure of internal consistency, the mean inter-item correlation indicated the scale's structural validity (Cronbach, 1951; Clark & Watson, 1995). Since it is independent of the number of items in the scale,

the mean inter-item correlation value was more often the target value recommended by scale developers in improving scales rather than increasing the number of items to enhance coefficient alpha. On the other hand, Cronbach's alpha has been shown to increase with the addition of more items (Voss, Stem & Fotopoulos, 2000).

The "corrected-to-total correlation" of a scale refers to the correlation coefficient of a given item to the summated mean of the other items. Guidelines suggest that the range of values reach the lowest acceptable benchmark of .30. The "coefficient alpha if items deleted" refers to the range of alpha values calculated if a given item were deleted. For example, if one item at a time were deleted and the remaining items' alpha calculated, a range of coefficient alphas was listed and compared to the original scale's alpha. A good scale would not contain an alpha higher than the original alpha. If by deletion of one item, the calculated alpha was higher than the original, that item is considered for removal from the scale unless there was a theoretical reason to retain it.

Subjective financial knowledge scale

To assess the internal consistency reliability of this scale for the posttest and pretest, Cronbach's alphas were calculated. The summary of this analysis is presented in Table 5.13. As shown in the table, the coefficient alphas were adequate at .77 for the posttest and .78 for the pretest but were below the acceptable benchmark of .80 for basic research.

Table 5.13

Subjective Financial Knowledge Scale for Posttest and Pretest: Item Characteristics and Internal Consistency Reliabilities

Subjective Financial Knowledge	**Scale Composite Score**		Inter-item correlation	Corrected-to-total correlation	Coefficient α if item deleted	Cronbach's **α**
	M	***SD***	***M* (Range)**	**Range**	**Range**	
Posttest	**16.50**	**3.05**	.32 (.16-.49)	.44-.60	.72-.76	.77
Pretest	**12.48**	**3.16**	.34 (.17-.53)	.36-.60	.74-.78	.78

The range of the scale's mean inter-item correlations for the posttest and the pretest scales fell within an acceptable range of .15 to .20 for a broad construct such as the subjective financial knowledge construct (Clark & Watson, 1995; Spiliotopoulou, 2009). The ranges of values in the "corrected-to-total correlation" column for the posttest and pretest showed moderate to strong correlation of each item to the summated mean of the other items, with means of .32 and .34, respectively, both above the lowest acceptable benchmark of .30. The range of values under the column, "coefficient alpha if items deleted" showed that none of the items if removed from the scale increased the estimated coefficient alpha for the scale of the remaining items. Based on the range of alpha values for the pretest, .72 - .76, none of these was higher than the Cronbach's alpha of the original scale, .77.

In addition to Cronbach's alpha value, the results of preceding reliability tests suggested that the scale was internally consistent and can be used to detect improvement in subjective financial knowledge for this FLE program. No attempt was made to further develop the scale in order to improve its internal consistency and inter-item correlation.

Financial Attitude Scales

Internal consistency of the attitudinal scales was analyzed using Cronbach's alpha, based on the mean inter-item correlations of the five items for each dimension. The results are in Table 5.14.

Table 5.14

Financial Attitudinal Scales for Posttest and Pretest: Item Characteristics and Internal Consistency Reliabilities

Financial Attitudes	**Scale Composite score**		Inter-item correlation	Corrected-to-total correlation	Coefficient α if item deleted	Cronbach's **α**
	M	***SD***	**Mean (Range)**	**Range**	**Range**	
Beliefs						
Posttest	21.88	3.37	.52 (.44-.58)	.60-.69	.79-.82	.84
Pretest	18.95	4.56	.56 (.48-.68)	.65-.71	.83-.84	.86
Self-efficacy						
Posttest	19.41	4.45	.50 (.31-.74)	.42-.76	.76-.85	.83
Pretest	16.43	5.34	.56 (.36-.72)	.50-.78	.81-.88	.87

The reliability coefficients for the financial belief scale, .84 for the posttest and .86 for the pretest, fell within values considered a "good" scale. Mean inter-items correlations were strong and the range of values for "corrected-to-total correlation" also all strong. If any of the items comprising the financial belief scale were deleted, none of the calculated coefficient alphas of the remaining items' scales were enhanced. These results indicated that the financial belief scale was reliable in measuring changes in the FLEP participants' financial beliefs.

As seen in Table 5.14, Cronbach's alphas computed for the financial self-efficacy scales were .83 for the posttest and .86 for the pretest, and also fell within values considered a "good" scale. Mean inter-items correlations were strong and the range of values for "corrected-to-total correlation" were also strong.

It was noted that the respective coefficient alphas for the posttest and pretest scales measuring financial self-efficacy increased if confidence in "manage money that affects the future" was deleted. If this item were removed, the posttest alpha rose from .83 (5 items) to .85 (4 items) and the pretest alpha from .87 (5 items) to .88 (4 items). However on theoretical grounds, this item was regarded as a good measure of financial self-efficacy where a student who could be dealing with money today already takes into account its future consequences. The item's inter-item Pearson correction with the other individual items, though the lowest, was significant, $p < .001$. The enhancement in internal consistency was minimal considering that the new alpha values still fell within a good scale range. So, this item was retained in the scale.

The results of the foregoing analysis suggested that the attitudinal scales were internally consistent and reliable. The five-item financial belief scale was reliable in measuring the children's improvement in financial belief after FLEP participation. Similarly, the five-item financial self-efficacy scale was considered reliable in measuring changes in the children's financial self-efficacy after FLEP participation.

Financial Behavior Scale and Subscales

The financial behavior subscales were created from the statements comprising each dimension. Internal consistency of each subscale was estimated using Cronbach's alpha, based on the mean inter-item correlations of the 2 or 3 items for each dimension. The posttests' and pretests' composite mean scores, standard deviation, and Cronbach's alphas and relevant inter-item correlations are shown in Table 5.15.

Table 5.15

Financial Behavior Subscales for Posttest and Pretest: Item Characteristics and Internal Consistency Reliabilities

Financial Behavior Subscales	**Subscale Composite score**		Inter-item correlation	Corrected-to-total correlation	Cronbach's **α**
	M	***SD***			
Spending (2 items)					
Posttest	**6.02**	**2.37**	.46	.46	.63
Pretest	**5.28**	**2.42**	.48	.48	.65
Budgeting (2 items)					
Posttest	**4.95**	**2.50**	.67	.67	.80
Pretest	**4.27**	**2.34**	.63	.63	.76
Tracking (2 items)					
Posttest	**4.98**	**2.54**	**.71**	**.71**	.83
Pretest	**4.31**	**2.45**	.74	.74	.85

For the 3-item spending scale, coefficient alpha for the posttest was 0.42. This low alpha value necessitated examination of how the items correlated with each other. Among the scale items, "impulse buying" did not correlate with "compare prices" and 'wait for sales.' $r(243) = .069$, $p = .28$ and $r(243) = .014$, $p = .82$, respectively. Further, correlation with the summated remaining two items was weak as indicated by its "corrected item-total correlation" value, .049. Also, its contribution to the scale was a mere 0.5%. Deleting this item improved the Cronbach's alpha coefficient to 0.63 for the remaining 2-item spending scale. Thus, "impulse buying" was removed from this scale.

The 2-item spending subscale consisting of "compare prices" and "wait for sales" yielded coefficient alphas of .63 for the posttest and .65 for the pretest. Since this subscale's coefficient alpha was below the acceptable .70 benchmark, other characteristics of the data were examined.

The significant inter-item correlation between the scale's two items for the posttest, $r(243) = .46$, $p < .001$, made it an acceptable. But, the results of its use in subsequent analysis would still be interpreted with caution.

The 2-item budgeting subscale had an acceptable coefficient alpha (α = .76) for the pretest and a good scale (α = .80) for the post test. Inter-item correlation was strong, .63 for the pretest and .67 for the posttest. This made a good subscale for measuring increase in the use of budgets.

The 2-item tracking subscale proved to be a good one for both for the posttest (α = .85) and the pretest (α = .85). Inter-item correlation was very strong, .74 for the pretest and .71 for the posttest. The subscale was reliable in showing improvements for tracking cash flows.

The foregoing tests suggested that the composite financial behavioral subscales were internally consistent and that these can be used to evaluate the outcome of students' improvement in financial behaviors: spending wisely, budgeting and tracking of cash flows.

A financial behavioral scale was created by combining the saving-spending ratio (Table 5.9) to the three subscales: spending wisely, budgeting and tracking of cash flow. This resulting 7-item behavioral scale's internal consistency was assessed using Cronbach's alpha and inter-item correlation. The summary of the analysis of the scale is shown in Table 5.16

Table 5.16

Financial Behavioral Scale for Posttest and Pretest: Item Characteristics and Internal Consistency Reliabilities

Financial Behavior Scale (7 items)	**Scale Composite score**		Inter-item correlation	Corrected-to-total correlation	Coefficient α if item deleted	Cronbach's
	M	***SD***	**Mean (Range)**	**Range**	**Range**	**α**
Posttest	19.68	6.59	.40 (.19-.71)	.36-.70	.79-.84	.83
Pretest	17.12	6.43	.39 (.13-.74)	.25-.68	.77-.84	.82

The 7-item composite behavioral scale had the estimated coefficient alphas exceeding .80 for the posttest and pretest. These alpha values made it a good scale. Further, the "mean inter-item

correlations" were higher than the benchmark range of .15 to .20 for instruments measuring broad dimensions. Although the range of inter-item Pearson correlations was as low as .13, all bivariate correlations were significant, p <.05 to p < .001.

The range of values for "corrected-to-total correlations" indicated that each item correlated with the summated value of the other items. These correlations were from moderate to strong. Although deletion of the saving-spending ratio from the scale improved the coefficient alpha of the scale, it did so minimally, for the posttest from .83 to .84 and the pretest from .82 to .84. Including this ratio provided a measure for the savings dimension needed to complete the scale's construct. Thus, saving-spending ratio was retained in the scale. With a Cronbach's alpha of .83, the financial behavior scale was considered reliable in gauging financial behavioral change after the FLEP.

There was an attempt to create a 4-item savings subscale but this yielded low Cronbach's alphas: .39 for the pretest and .58 for the posttest. In addition, inter-item correlation ranged from .077-.432, where weak Pearson correlations coefficients were not significant. Because the items did not all correlate, it was not possible to create an internally consistent composite savings scale.

One explanation was the fact that students would save money from one source but spend money from another source, thus reducing internal consistency of the scale. Further, some students did not receive money from all the sources. Those who did not receive money from one or more were coded 0 and marked as missing data so SPSS did not include them in the calculation of coefficient alpha. The composite scale was constituted from the reduced number of cases 92 (32%) of 245, represented by students who receive money from all sources. By reducing the cases, internal consistency usually decreased.

5.1.3 Significant Changes in Financial Outcome Scales

The effectiveness of FLEP from here on would be examined in terms of changes in the levels of financial outcome scales before and after the program. Significant positive mean differences

between the scales' composite posttest and pretest scores were indicative of FLEP's success in improving the eighth graders financial knowledge, beliefs, self-efficacy and behaviors. Table 5.17 presents a summary of the percentage of students posting gains per financial outcome, and their corresponding statistical test results and effect sizes. It was in financial knowledge that almost 90% of students benefited. Close to two thirds of the students reported positive changes in financial beliefs and financial self-efficacy. About half of the students posted improvement in at least one of the financial behaviors. On specific behavioral subscales, only a third of the students reported improvements in budgeting, tracking cash flows and their saving spending ratio. Progress in spending wisely registered the highest percentage of students (39%) reporting gains in this aspect.

Table 5.17

Percentage of student-reported gains, Mean differences, standard deviation, standard error, t-statistic of financial outcomes scales for financial knowledge, attitudes and behavior

Financial outcome scales Subscale	Reported Gain (% of *N*=245)	Mean Difference				
		Posttest-Pretest	Std. Deviation	Std. Error Mean	*t*** (df)*	Cohen's *d*
Financial Knowledge (7 items)	**88.2%**	**4.02**	**3.16**	**0.20**	**19.94 (244)**	**1.29**
Financial Attitudes						
Financial Belief (5 items)	67.3%	2.93	3.37	0.22	13.55 (242)	0.73
Financial Confidence (5 items)	66.1%	2.97	3.51	0.23	13.17 (242)	0.61
Financial behavior (7 items)	**54.7%**	**2.55**	**3.77**	**0.24**	**10.58 (243)**	**0.39**
Spending (2 items)	39.2%	0.74	1.18	0.08	9.78 (244)	0.31
Budgeting (2 items)	30.2%	0.68	1.44	0.09	7.38 (244)	0.28
Tracking (2 items)	31.8%	0.66	1.29	0.08	8.04 (244)	0.27
Saving-spending ratio	33.1%	0.47	0.97	0.06	7.52 (243)	0.40

*** $p < .001$ for the *t*-statistics results

In addition, Table 5.17 shows that each of the scales' positive mean differences between pre and posttest composite scores was statistically significant at the $p < .001$ level. It means that it is highly unlikely that the gains occurred by chance. The results indicate that the biggest improvement was observed in subjective financial knowledge scales ($M = 4.02$, $SD = 3.16$, $t(244) = 19.94$, $p < .001$) followed by financial beliefs ($M = 2.93$, $SD = 3.37$, $t(242) = 13.55$, $p < .001$) and financial self-efficacy ($M = 2.97$, $SD = 3.51$, $t(242) = 13.17$, $p < .001$). The weakest improvement was in financial behaviors

(M = 2.55, SD = 3.77, $t(243) = 10.58$, $p < .001$). The effect of exposure in the FLEP appeared to diminish from knowledge to beliefs and self-efficacy, and finally to behavior. After enhancements in financial knowledge and attitudes, students may not immediately change their behaviors due to other factors (individual bias, self-control, family and other economic circumstances) that co-influence the adoption of financial behaviors (Huston, 2010). One of the parents noted: "Importance of saving for the future is understood but the execution is lacking."

For the entire students' respondent pool, mean differences between the posttest and pretests for financial behavioral subscales were positive and statistically significant for spending wisely (M = 0.74, SD = 1.18, $t(244) = 9.78$, $p < .001$), budgeting (M = 0.68, SD = 1.44, $t(244) = 7.38$, $p < .001$), tracking cash flows (M = 0.66, SD = 1.29, $t(244) = 8.04$, $p < .001$), and saving-spending ratio (M = 0.47, SD = 0.97, $t(243) = 7.52$, $p < .001$).

The practical significance of the results is indicated by each outcome's effect size and expressed using Cohen's d. The oft-used guidelines for describing effect sizes based on the magnitude of Cohen's d were suggested by Cohen (1988): small if $d \leq 0.2$; moderate if $d > 0.2$ but ≤ 0.5; large if $d > 0.5$ but ≥ 0.8; and very large if $d > 0.8$ but ≤ 1.5. The magnitude of the financial knowledge gain is considered to be of very large practical significance (Cohen's d = 1.29). The effect sizes of the enhancements in financial belief (Cohen's d = 0.73) and financial self-efficacy (Cohen's d = 0.61) are both large; and improvement in financial behavior is moderate (Cohen's d = 0.39). These are significant real world effects. Perceptions of the students and their parents on the nature of the outcomes the FLEP has achieved are found in Chapter 6.

These results are suggestive of FLEP's usefulness in increasing financial literacy, improving attitudes and changing behaviors. However, it is possible that portions of the financial outcome gains were due to other factors. More statistical tests are conducted in Chapter 5 to examine the portion

of the outcomes that could be attributable to FLEP participation while accounting for other potential determinants.

5.2 Extent of FLEP Participation

This section presents the independent variable, FLEP participation score, its conceptualization and how it was measured. The variable is conceptualized as a composite score of the student's financial competence being built up from transmission of human capital (financial knowledge and skills) and social capital (support of peers, teachers and credit union officers). Based on the modules offered to the students and their self-rating of their participation in the FLEP's modules offered to them, three variants of the FLEP were identified, namely: Two Module, Two+ Module and Three Module.

5.2.1 Operationalizing FLEP Participation Score

As the treatment (independent variable) of this study, the FLEP participation is a composite score derived from the conceptualization that the student's financial competence builds up from transmission of human capital (financial knowledge and skills) and social capital (support of peers, teachers and credit union officers). The components of the FLEP participation score are shown in Table 5.18.

Conceptualizing the treatment of the study in this way made it different from previous studies in which usual measures used were attendance or non-attendance, percent attendance or number of lessons attended. In this study, the human capital input was operationalized as "active participation" and "fulfillment of requirements." Students self-reported their level of effort in each module, i.e., whether they were actively or sparingly engaged in each module's activities, and submitted their specific requirements.

Table 5.18

The Modules of the Financial Literacy Education Program

		Components of the FLEP Participation Score	
FLE Modules	Duration	Human Capital Input	Social Capital Input
1 Career Exploration	Two weeks	Class participation Fulfillment of requirements Resume and cover letter Job application Mock job interview	Support of Teachers
2 Math Fair	Two hours	Class participation Fulfillment of requirements Budget Sheet Certificate of completion	Support of Friends Teachers Credit union counselor
3 Checkbook Project	Ten months	Class participation Fulfillment of requirements Balanced checkbook Monthly cash flow reports	Support of Friends Teachers Credit union representative Loan officer

Social capital input was operationalized as "support from others." Students self-reported the level of perceived level of personal informal learning experience from the main social actors of the school-based FLEP, namely the teachers, credit unions representatives and other students in the program. Lusardi, Michell and Curto (2010) found that "teachers' interest in students" during the grade school period had a positive effect on the financial literacy among young adults. This idea that the motivation of the teachers influenced financial literacy was extended in this study to include other people involved in formally instructing the students like credit representative and students who informally supported each other in the notion of social capital input to enhancing financial capability.

Based on this conceptualization, the independent variable was referred to as extent of FLEP participation, and was numerically signified by the FLEP participation score. The following explanation summarizes the composition of what comprised the extent of participation for each module.

Career Investigation Module

The extent of participation in the Career Investigation module consisted of active class participation, fulfillment of requirements as human capital inputs; and perceived support of teachers as the social capital input. There were two versions of this module. One was the basic module and the other enhanced version. Both versions consisted of individual research on their career interest, including the essential skills and aptitudes to be considered competent for the job, the necessary education and the estimated starting salary of its typical first job. The enhanced version added the requirements to draft a cover letter and resume that incorporates the education and skills expected of their career interest, and finally to undergo a simulated job interview process. Social input came from the perceived support of teachers involved in this module who gave individualized attention to students by giving feedback to their required outputs and tips to improve them and do well in the mock interview.

The Math Fair

The extent of participation in the Math Fair was composed of active participation the intense two-hour Math Fair and fulfillment of requirements as human capital inputs and perceived learning from teachers, credit counselors, and friends as social capital inputs.

Students came to the Math with their budget sheets, starting off with their first job's salary less taxes, then moved to different vendor booths to allocate money for living expenses, savings and if they want, some luxury items. Each student had to confer with a credit counselor about their completed budget sheet, seek individualized advice, get their budgets' approved and obtain from him/her their Certificate of Participation. Aside from getting support from teachers and the credit counselors, students were able to mutually support each other with tips to figure out financial options in the Math Fair, help in calculations and sharing of apartments to reduce cost of rent, utilities and cable.

Budget and Checkbook Project

The extent of participation in the Budget and Checkbook Project included active class engagement in its various activities and fulfillment of requirements as human capital inputs and perceived learning from teachers, credit union representatives, loan officer and other students as social capital inputs.

The main requirement for this module was to submit a balanced statement of their checkbook monthly, showing their bi-weekly paychecks and monthly check payments for rent and car loans; and other income and expenses. Teachers set up the project for students to learn writing checks, balancing a checkbook and responsibility in paying bills. Credit union representatives gave class presentations and facilitated Q&A's about credit card, savings, taking a car loan etc. Actual loan officers came to the school to simulate car loan applications where each student negotiated with them. Mutual help among students consisted in informal support of supplying information, a source to borrow checks from if they ran short of income to pay their bills and help to complete their monthly statements.

The relative scores assigned to each of the FLEP modules intended to capture the scope of learning opportunities the students were exposed to. Table 5.19 presents the breakdown of the maximum FLEP participation scores by capital inputs and by module.

Table 5.19

The Maximum FLEP Participation Scores Assigned per Module and by Human and Capital Inputs

FLEP Module	Capital Inputs		Total Inputs by Module
	Human	Social	
Career Investigation			
Simple	3	2	5
Enhanced	7	2	9
Math Fair	6	6	12
Checkbook Project	6	8	14
Maximum by Capital Input	19	16	35

The Career Investigation module was of two types: simple and enhanced. The enhanced version was allocated a total score of 9 and carried the highest human capital score of 7 because of the individual research and preparations needed to complete the requirements. But it had the lowest social input score of 2 because the most important social learning source at this point were the teachers who gave them individualized advice. The simple version was assigned a total score of 5 with a human capital input of 3 for active participation through individual research and a social capital input of 2 from perceived support of teachers.

The Math Fair was assigned a total score of 12. Although short in duration, it was assigned a human capital of 6 to reflect an intensive period for the students in having to make the financial decisions so as to "live within their means." There were more social actors intervening in student learning during the Math Fair and so a score of 6 was allotted to its social capital input.

The highest overall score of 14 was assigned the Checkbook Project so that it reflected the variety of lessons provided to the students, the length of time it took and the most number of social actors that they had the opportunity to informally learn from. It was assigned a score of 6 for human capital input and 8 for social capital input.

There were four clusters that composed the school's eighth grade level. As planned, the school teachers implemented Career Exploration and the Math Fair to all four clusters. Only Cluster 4 added the year-long Checkbook Project.

The group of Cluster 1 students who participated in the simple Career Investigation and exposed to the Math Fair was denoted as "Two Module." The group made up of Clusters 2 and 3 students who took part in the enhanced version of Career Investigation and the Math Fair were referred to as "Two+ Module." As a group, Cluster 4 students who experienced the enhanced version of Career Investigation, the Math Fair and the Checkbook Project were named "Three Module." A summary of the modules implemented for each FLEP group is shown in Table 5.20.

Table 5.20

Summary of FLEP Groupings and the Modules Implemented

		FLEP Groupings		
FLEP Modules		Two Module (*n*=54)	Two + Module (*n*=125)	Three Module (N-66)
Career Exploration	Simple	Yes		
	Enhanced		Yes	Yes
Math Fair		Yes	Yes	Yes
Checkbook Project				Yes

Note: The data from students who reported no participation in any of the modules of their respective clusters were removed from the analyses.

Based on the module composition of each FLEP group, Two Modules had the lowest maximum FLEP score of 17, Two+ Module 21 and Three Module 35.

5.2.2 Extent of FLEP Participation for Each Module

In this subsection, students self-reported the extent to which they actively participated in the modules provided to them. They also rated if they felt teachers, credit union representatives, credit counselors and friends supported them to learn.

The Career Investigation Module

For Career Investigation, students indicated how much of the module they participated in. After reading the statement, "I actively participated in Career Investigation," students selected their response from the following options: 1= few parts, 2 = most of it, 3 = all parts of it. The mean responses by FLEP Group are shown in Table 5.21. It can be seen that active participation was highest for students in Two+ Module and a close second was for those in Three Module.

Then students reported which requirements they completed by checking what applied to them: 1 = a resume, 2 = job application. If not selected, the requirement was coded 0. Students indicated their participation in another activity by completing the statement, "I experienced a mock job interview." They chose from three options: 0 = did not see this, 1 = I was only an observer, 2 = Yes, I was interviewed. It could be observed in Table 5.21 that students in Two+ Module and Three

Module had the highest means, very close to the maximum possible scores. Practically every one of them prepared a resume; the majority completed a job application, almost all of the students experienced a mock job interview. In contrast, almost all the students in Two Module did not do any of these or were likely not required to do so.

As to their perceived teachers' support for this module, students were asked to respond to the statement, "I felt my teacher(s) cared that I learn from doing the Career Investigation" by selecting from these options: 0 = not really, 1 = some of them, 2 = all of them. Gauging from the mean of the responses, students felt they were supported by most of their teachers.

Table 5.21

Components of the Human and Social Capital Inputs for the Career Investigation Module: Mean and Standard Deviation by FLEP Grouping

Career Investigation	Two Module (*n*=54)		Two+ Module (*n* =125)		Three Module (*n* -66)	
	Human Capital	Social Capital	Human Capital	Social Capital	Human Capital	Social Capital
Participation	2.06		2.87		2.79	
	(0.98)		(0.40)		(0.45)	
Prepared resume	0.02		0.98		0.97	
	(0.14)		(0.15)		(0.17)	
Completed job application	0.04		0.89		0.70	
	(0.19)		(0.32)		(0.46)	
Job interview experience	0.06		1.92		1.94	
	(0.30)		(0.35)		(0.35)	
Teachers' support		1.65		1.71		1.58
		(0.68)		(0.51)		(0.56)

The Math Fair

All students were encouraged to participate in the Math Fair. Equipped with folder that contained a pen, a calculator and their budget sheet, students went through a simulated budgeting exercise. The budget sheet had the starting salary of their chosen career, less taxes as the income to allocate for an array of expenditures and savings. The outcome survey measured the extent of participation in this module. For the statement, "I actively participated in the Math Fair" students selected either 0= No, 3 = Yes.

The mean response for each FLEP group is shown in Table 5.22. The summary table shows that the response means were either 3.0 or 2.98, which suggested that all the students of the surveys analyzed were actively engaged in the exercise. This fact was supported by student completion of the requirement for this module. Students indicated this by selecting from the options 0 = no, 3 = yes, for the statement "I completed my budget and got a certificate." The mean response in this case ranged from 2.93 to 2.95, scores close to the highest possible score of 3. This result confirmed the teachers' observation that even students who in class barely pay attention were so actively engaged in the Math Fair activities; they were going to all the vendor booths, calculating their budgets and conferring with their classmates and the credit counselors. One of the Math teachers commented: "Some of the kids that do not put a lot of effort in the classroom, and you see them down there [in the Math Fair]; everybody is working a hundred percent. … At least one day a year, they are really interested in Math."

Table 5.22

Components of the Human and Social Capital Inputs for the Math Fair Module: Mean and Standard Deviation by FLEP Grouping

Math Fair	Two Module (*n*=54)		Two+ Module (*n* =125)		Three Module (*n* -66)	
	Human Capital	Social Capital	Human Capital	Social Capital	Human Capital	Social Capital
Participation	3.00		2.98		3.00	
	(0.00)		(0.27)		(0.00)	
Got completion certificate	2.94		2.93		2.95	
	(0.41)		(0.46)		(0.37)	
Friends' support		1.39		1.62		1.53
		(0.71)		(0.58)		(0.64)
Counselor's support		0.93		1.29		1.26
		(0.64)		(0.66)		(0.71)
Teacher's support		1.69		1.58		1.61
		(0.58)		(0.57)		(0.55)

The social capital inputs came from several sources, namely friends, the credit counselors and their teachers. For the statement, "My friends and I supported each other during the Math Fair," students choose from the following options: 0 = not really, 1 = a few times, 2 = a lot. Friends' support

was highest among students in Two+ Module and lowest for Two Module. For the statement, "The credit counselor in the Math Fair helped me figure out my budget," students selected from the following options: 0 = not really, 1 = helped some, 2 = helped a lot. The mean score for perceived help from credit counselors were more felt by students in Two+ Module and Three Module than those in Two Module. As to perceived teachers' support, students were asked to respond to the statement, "I felt my teacher(s) cared that I learn from being in the Math Fair" by selecting from these options: 0 = not really, 1 = some of them, 2 = all of them. Gauging from the mean of the responses, students felt they were supported by most of their teachers.

The Budget and Checkbook Project

Only students in Three Module experienced the Checkbook Project. Students responded to the statement, "I actively participated in the Checkbook Project" by indicating how much they were engaged in its activities with one of three options: 1= few parts, 2 = most of it, 3 = all parts of it. As seen in Table 5.23, the students' mean response of 2.73 was a value close to the highest possible score of 3. This suggested that students felt they actively took part in the various activities of this year-long project.

For the statement "I completed all the requirements …," the students reported the relative amount of requirements they accomplished by selecting from the response options: 1 = a few, 2 = most of them, 3 = all of them. Based on a calculated mean response of 2.53, not all the requirements were perfectly met.

Social capital inputs came from credit union lecturers who provided financial literacy lessons, credit union loan officers who simulated car loan applications, friends' help and teachers' support. Students indicated the relative amount of financial lessons they learned by responding to the statement "I learned from the presentations of the credit union representatives" from the following

options: 0 = not really, 1 = learned some, 2 = learned a lot. A mean response of 1.26 seemed to indicate that students learned some from the credit union lecturers.

Table 5.23

Components of the Human and Social Capital Inputs for the Checkbook Project: Mean and Standard Deviation

	Three Module (*n*=66)	
Checkbook Project	Human Capital	Social Capital
Participation	2.73 (0.57)	
Completed requirements	2.53 (0.66)	
Credit Union representative lectures		1.26 (0.69)
Credit Union loan officer		1.29 (0.72)
Friends' support		1.06 (0.74)
Teacher s' support		1.42 (0.63)

In the statement, "The credit union loan officer helped me understand how to get a car loan" students indicated to what extent this was true by choosing from the options: 0 = not really, 1 = a little, 2 = a lot. Gauging from a mean response of 1.29, students felt that the loan officers they dealt with were of little help in understanding the loan application process.

For this statement "My friends and I helped each other during the Checkbook Project," students indicated how often this actually happened by selection for the following options: 0 = not really, 1 = sometimes, 2 = a lot. A mean response of 1.06 suggested that friends are sometimes helpful.

Perceived teachers' support was reflected from the students' response to the statement, "I felt my teacher(s) cared that I learn from the Checkbook Project" signifying what proportion of supportive teachers using one of the response options: 0 = not really, 1 = some of them, 2 = all of

them. Based on the mean response of 1.42 for teachers' support, students felt they were supported by some of their teachers.

5.2.3 Total Human Capital and Social Capital Input Components by FLEP Grouping

Itemizing student participation scores in each of the module's component parts clearly showed how total FLEP participation scores for each module were derived. Each module's total mean scores were calculated for each FLEP group by summing up the corresponding human capital and social capital input scores. Then total module scores were added to constitute the FLEP participation score for each FLEP group. Table 5.24 shows the contribution of human and social capitals to learning about financial matters in the middle school context.

Table 5.24

Mean and Standard Deviation for Each Modules' Human Capital and Social Capital Inputs by FLEP Grouping

	Two Module (*n*=54)		Two+ Module (*n* =125)		Three Module (*n* -66)	
FLEP Module and Components	*M*	*SD*	*M*	*SD*	*M*	*SD*
Career Investigation						
Human capital input	2.17	1.06	6.66	0.78	6.39	0.86
Social capital input	1.65	0.68	1.71	0.51	1.58	0.56
Total Module 1 score	**3.81**	**1.26**	**8.32**	**1.11**	**7.89**	**1.25**
Math Fair						
Human capital input	5.94	0.41	5.90	0.53	5.95	0.37
Social capital input	4.00	1.15	4.48	1.12	4.39	1.18
Total Module 2 score	**9.94**	**1.22**	**10.38**	**1.22**	**10.35**	**1.21**
Checkbook Project						
Human capital input					5.26	1.14
Social capital input					5.03	1.90
Total Module 3 score					**10.29**	**2.66**
All Modules						
Total human capital input	8.11	1.09	12.56	1.01	17.61	1.86
Total social capital input	5.65	1.32	6.19	1.35	11.00	3.05
Total FLE participation score	**13.76**	**1.53**	**18.70**	**1.87**	**28.53**	**4.30**

An inspection of these total scores in Table 5.24 revealed differences in treatment intensity from the students' point of view. For the Career Investigation row, Two Module students got the

least human capital input (*M* = 2.17, *SD* = 1.06) compared to those in Two+ Module (*M* = 6.66, *SD* = 0.78) and Three Module (*M* = 6.39, *SD* = 0.86). But social capital input was comparable across groups. The Math Fair had most of the students fully engaged based on the summated mean for human capital input scores, almost reaching the ceiling score of 6.0. This was true for all three groups. However, the social capital input means varied across groups, *M* = 4.00, *SD* = 1.15 for Two Module, *M* = 4.48, *SD* = 1.12 for Two+ and *M* = 4.39, *SD* = 1.18 for Three Module.

5.2.4 FLEP Grouping Based on Extent of FLEP Participation (FLEP participation score)

This subsection shows how the FLEP participation scores of each cluster was used to determine FLEP grouping. The extent of participation by cluster and their corresponding human capital and social capital components are shown as an average composite score in Table 5.25. To determine if the level of participation (FLEP scores) were significantly different from each other, one-way ANOVA of these mean scores was conducted. Results showed that the assumption of homogeneity of variances was not met. Thus, the robust test for equality of means, the Brown-Forsythe statistic, was considered instead of results of ANOVA's *F*-statistic. Games-Howell *post hoc* tests revealed significant differences between FLEP groups at the 0.001 level. The Games-Howell test was appropriate for this case where group sizes varied and the homogeneity of variances unmet.

Table 5.25

Mean and Standard Deviation and Results of Analysis of Variance by Clusters.

Components of FLEP Participation Score	Cluster 1 (*n*=54)	2 (*n*=64)	3 (*n*=61)	4 (*n*=66)	*F*	*df*	*Post hoc*
Human Capital Input	8.11 (1.09)	12.75 (0.69)	12.36 (1.24)	17.61 (1.86)	345.47***	[3, 135.4]	1 < 2, 3 < 4
Social Capital Input	5.65 (1.32)	6.17 (1.46)	6.21 (1.24)	11.00 (3.05)	549.18***	[3, 177.9]	1, 2, 3 < 4
Total FLEP score	13.76 (1.53)	18.92 (1.58)	18.48 (2.12)	28.53 (4.30)	110.31***	[3, 146.8]	1 < 2, 3 < 4

Note. *** = $p < .001$. Standard deviations appear in parentheses below means. The Robust Tests of Equality of Means yields Brown-Forsythe statistic and is followed by the degrees of freedom in brackets. The numbers in the "*Post hoc*" column refer to the Cluster number. Means within rows are significantly different at the $p < .001$ based on Games-Howell *post hoc* tests.

For human capital input, Cluster 1 was significantly lower than that of Cluster 2 and Cluster 3 significantly lower than Cluster 4. The mean difference between Clusters 2 and 3 was not significant. For social capital input, Cluster 3 was significantly lower that of Cluster 4. But the mean differences between Clusters 1 and 2, Clusters 1 and 3, and Clusters 2 and 3 were not statistically significant. As to the total FLEP participation score across clusters, the trend in terms of mean differences was similar to that of human capital input. Obtaining no significant difference in FLEP score means, Clusters 2 and 3 were combined to form one distinct FLEP group and called "Two+ Module". Thus, Cluster 1 was called "Two Module" and Cluster 4 was named "Three Module."

A one way ANOVA showed the significant difference in means pair-wise by FLEP groups within rows for human capital input, social capital input and total FLEP score. Table 5.26 presents the results for ANOVA. Games-Howell *post hoc* tests yielded significant differences in means within each row of independent variables in all pair-wise combinations. Based on row containing the total FLEP mean score, students in Two Module (M = 13.76, SD = 1.53) received significantly less of the FLEP exposure than those in Two+ Module (M = 18.70, SD = 1.87) and Three Module (M = 28.53, SD = 4.30). Students in Two+ Module got significantly less than those in Three Module.

Table 5.26

Comparison of Means by FLEP Grouping and Results of Analysis of Variance for Human Capital Input, Social Capital Input and Total FLEP Participation

Components of FLEP Participation Score	FLEP Grouping: Two Module (1) (n = 54)	Two+ Module (2) (n = 125)	Three Module (3) (n = 66)	F	η^2	*Post hoc*
Human Capital Input	8.11	12.56	17.61	415.95***	.87	1 < 2 < 3
	(1.09)	(1.01)	(1.86)	[2, 100.2]		
Social Capital Input	5.65	6.19	11.00	687.57***	.57	1 < 2 < 3
	(1.32)	(1.35)	(3.05)	[2, 134.7]		
Total FLEP score	13.76	18.70	28.53	132.70***	.80	1 < 2 < 3
	(1.53)	(1.87)	(4.30)	[2, 108.9]		

Note. *** = p < .001. Standard deviations appear in parentheses below means. The numbers in parentheses in column heads refer to the numbers used for showing significant differences in the "*Post hoc*" column. The Robust Tests of Equality of Means yielded Brown-Forsythe F statistic and the degrees of freedom in brackets below it. The numbers in the "*Post hoc*" column refer to the Cluster number. Means within rows are significantly different at the p < .05 based on Games-Howell *post hoc* tests. Eta square is an estimate of the effect size.

The estimate of effect size magnitude, eta square (η^2) indicated how large the differences between groups were as explained by Levine & Hullet, (2002). Based on Table 5.26, the mean differences in human capital transmission through the active participation of the students were the biggest at 87%, with the Three Module group posting the highest level of input; next was the Two+ Module, then the Two Module. Social capital input differences were at 57%, with a similar trend by FLE Group. Differences in total FLEP participation scores were about 80%, following the same order by groups.

5.3 Changes in Financial Outcome Scores within Each FLEP Group

Three distinct FLEP groups were identified in the previous section by using the students' FLEP participation score. Since treatment intensity varied across FLEP groups, it was expected that financial outcomes would increase with the increase in treatment intensity. Data used in Section 5.1 are tabulated, described and analyzed by FLEP groups to determine the effects of each FLEP variant.

5.3.1 Financial Quiz Score and Changes In Financial Outcome Scales within FLEP Groups

The first tabulation of data by FLEP grouping, shown in Table 5.27, includes the means and standard deviation of financial quiz as well as the pretest and posttest raw mean scores of subjective financial knowledge, financial belief, financial self-efficacy and financial behavior; and the percentage of students who posted gains in financial outcome levels after the FLEP.

As seen in the summary table, students in Two Module got the highest quiz score and those in Three Module the lowest. This was the reverse of the expectation that if the FLEP were the only source of financial knowledge, the Three Module which received the most FLEP exposure would get the highest scores, whereas Two Module which received the least FLEP exposure, the lowest. The scores are highest for the Two Module group probably due to the fact that the survey was not administered to the class with students who had English language and learning difficulties. This likely

raised the average cognitive abilities of the survey takers, and hence also the mean quiz scores. Without a pretest quiz, it remains uncertain if there was an actual increase in knowledge after the FLEP. If there was a change in knowledge, it could not be known what part of the change can be attributed to the FLEP or some other source. In Chapter 5, correlations were conducted to reveal which FLEP group's participation score was associated with financial quiz scores. Analysis of variance would be used later to determine if there are significant differences between group means. Furthermore, by using multiple regressions for each group to explain the variance of its financial quiz scores, confounding variables could be statistically controlled to expose the part of the quiz variance that was attributed to the program.

Table 5.27

Summary of Mean, Standard Deviation and Percentage of Students Who Gained in Each Financial Outcome Scales by FLEP Grouping

Financial outcome scales	Two Module		Two + Module		Three Module	
	%*n* Gained	*M (SD)*	%*n* Gained	*M (SD)*	%*n* Gained	*M (SD)*
Financial Quiz	(*n* = 53)		(*n* = 125)		(*n* = 65)	
Posttest		5.66 (1.62)		5.18 (1.54)		4.91 (1.92)
Financial knowledge	91% (*n* = 54)		88% (*n* = 125)		86% (*n* = 66)	
Posttest		16.59 (2.87)		15.94 (3.09)		17.48 (2.91)
Pretest		12.74 (2.81)		12.12 (3.08)		12.95 (3.54)
Mean difference		*3.85 (2.67)*		*3.82 (3.36)*		*4.53 (3.12)*
Financial belief	61% (*n* = 53)		70% (*n* = 125)		65% (*n* = 65)	
Posttest		21.58 (2.90)		22.01 (3.12)		21.88 (4.15)
Pretest		18.75 (4.30)		18.90 (4.42)		19.22 (5.07)
Mean difference		*2.83 (3.39)*		*3.11 (3.48)*		*2.66 (3.17)*
Financial self-efficacy	72% (*n* = 54)		67% (*n* = 124)		59% (*n* = 65)	
Posttest		18.70 (4.29)		19.27 (4.40)		20.20 (4.65)
Pretest		15.85 (4.94)		15.91 (5.34)		17.89 (5.48)
Mean difference		*2.85 (3.01)*		*3.36 (3.97)*		*2.31 (2.85)*
Financial behavior	63% (*n* = 54)		39% (*n* = 125)		55% (*n* = 65)	
Posttest		19.41 (6.67)		18.96 (6.53)		21.28 (6.47)
Pretest		16.50 (6.36)		16.39 (6.05)		19.05 (6.90)
Mean difference		*2.91 (3.66)*		*2.57 (4.02)*		*2.23 (3.37)*

As seen in Table 5.27, Three Module's pretest and posttest scores across groups for each financial outcome rows were consistently higher than those of the other group means. But the financial outcome means for Two Module and Two+ Module were comparable. It is possible that the

Three Module students posted pretest levels referencing a period closer to the date they took the survey instead of their pretest level eight months earlier when they started the Budget and Checkbook Project. By the time the survey was taken, Three Module students may have already improved their financial outcomes, thus a higher baseline score.

The effects of each FLEP variant on student financial outcomes were examined within groups. As seen in Table 5.28, dependent *t* tests on the students' pretest and posttest mean score differences were run for each financial outcome, and yielded statistically significant improvements at $p < .001$, in financial knowledge, financial attitudes and financial behaviors a month after participation in the FLEP variants. Effect sizes of each FLEP variant indicate that financial knowledge increased to in very large degrees, financial belief and self-efficacy improved to a large extent except for the Three Module group to a moderate level, and financial behavior to moderate levels.

Table 5.28

Results of Dependent t-Tests and Effect Sizes for Changes in Financial Knowledge, Attitude and Behavior Scales by FLEP Groups

Financial outcome scales (composite scores)	Two Module *n* = 54		Two + Module *n* = 125		Three Module *n* = 66	
	t (df)	Cohen's *d*	*t (df)*	Cohen's *d*	*t (df)*	Cohen's *d*
Financial knowledge	10.59*** (53)	1.36	12.74*** (124)	1.45	11.80*** (65)	1.53
Financial belief	6.08*** (52)	0.77	10.01*** (124)	0.81	6.76*** (64)	0.57
Financial self-efficacy	6.97*** (53)	0.62	9.44*** (123)	0.69	6.53*** (64)	0.45
Financial behavior	5.84*** (53)	0.45	7.14*** (124)	0.41	5.33*** (64)	0.33

Note: Standard deviation is in parenthesis below the mean difference. Degrees of freedom are in parenthesis below the *t*-statistic.
*$p < .05$; ** $p < 01$; *** $p < .001$

It was important to determine if the FLEP groups' baseline levels, particularly in financial knowledge which the program intended to improve, were more or less at the same level across groups. Statistical tests in Chapter 5 revealed that baseline scores in financial knowledge were not

significantly different before the start of the FLEP. In addition, another statistical test will determine if mean differences of the posttests scores between groups are significant while taking the pretest scores into consideration. This was achieved by using an analysis of covariance to control for the effects of the pretest on posttest variation so that the effect attributable to the FLEP participation could be exposed.

5.3.2 Changes in Financial Behavior Subscales within FLEP Groups

Posttest and pretest means for financial behavior subscales are shown by FLEP groups in Table 5.29. The scores for Three Module were again consistently higher than those of the other groups; but those of the other groups were comparable. These higher levels could be due to error in the reference period.

Table 5.29

Summary of Mean and Standard Deviation for Financial Behavior Subscales by FLEP Groups

Financial behavior Subscales	Two Module		Two + Module		Three Module	
	M	*SD*	*M*	*SD*	*M*	*SD*
Spending wisely						
Posttest	5.54	2.22	5.94	2.40	6.55	2.37
Pretest	4.74	2.13	5.18	2.42	5.91	2.53
Budgeting						
Posttest	5.02	2.38	4.63	2.45	5.48	2.62
Pretest	4.24	2.23	3.96	2.20	4.88	2.59
Tracking						
Posttest	5.13	2.61	4.79	2.42	5.20	2.70
Pretest	4.37	2.43	4.10	2.28	4.68	2.74
Saving-spending ratio						
Posttest	3.72	1.12	3.59	1.17	3.88	1.05
Pretest	3.15	1.20	3.16	1.27	3.43	1.24

Dependent (paired) *t* test on the students' pretest and posttest difference yielded statistically significant results at $p < .001$, as seen in Table 5.30. Thus, students from the different FLEP groups significantly improved in spending wisely, budgeting, tracking of cash flow and their saving-spending ratio.

Table 5.30

Results of Dependent t-Tests for Financial Behavior Subscales by FLEP Groups

Financial behavior subscales	Two Module		Two + Module		Three Module	
	Mean Diff	*t (df)*	Mean Diff	*t (df)*	Mean Diff	*t (df)*
Spending wisely	0.80	5.87***	0.77	6.56***	0.64	4.80***
	(1.00)	(53)	(1.31)	(124)	(1.08)	(65)
Budgeting	0.78	4.26***	0.67	5.36***	0.61	3.10**
	(1.34)	(53)	(1.40)	(124)	(1.59)	(65)
Tracking	0.76	4.15***	0.70	5.68***	0.52	3.91***
	(1.34)	(53)	(1.37)	(124)	(1.07)	(65)
Saving-spending ratio	0.57	4.57***	0.43	4.64***	0.45	4.15***
	(0.92)	(53)	(1.04)	(124)	(0.87)	(64)

Note: Standard deviation is in parenthesis below the mean difference. Degrees of freedom are in parenthesis below the *t*-statistic.
*$p < .05$; ** $p < 01$; *** $p < .001$

5.3.3 Changes in Savings Behavior within FLEP Groups

Pretest and posttest mean scores for savings behavior by source is presented in Table 5.31 for each FLEP group. Three Module students, on the average, posted higher levels of savings behavior from all sources of money than those of the other groups except for savings from plain allowance. Two+ Module students appeared to have higher levels of savings behavior than Two Module students. Statistical tests in Chapter 5 determined from which source(s) savings behavior level differed significantly across groups.

Table 5.31

Summary of Mean and Standard Deviation for Savings Behavior by Source of Money by FLEP Groups

Savings by Source of Money	Two Module		Two + Module		Three Module	
	M	*SD*	*M*	*SD*	*M*	*SD*
Plain allowance	(*n* = 28)		(*n* = 71)		(*n* = 38)	
Posttest	2.29	1.44	2.85	1.56	2.82	1.57
Pretest	1.96	1.35	2.82	1.50	2.63	1.58
Pay for odd jobs	(*n* = 32)		(*n* = 71)		(*n* = 39)	
Posttest	3.19	1.69	3.08	1.54	3.28	1.54
Pretest	2.84	1.67	2.79	1.53	3.03	1.58
Allowance for chores	(*n* = 32)		(*n* = 87)		(*n* = 53)	
Posttest	3.19	1.47	3.23	1.40	3.23	1.48
Pretest	2.66	1.31	2.89	1.43	3.08	1.52
Money gift	(*n* = 52)		(*n* = 123)		(*n* = 65)	
Posttest	3.33	1.40	3.47	1.40	3.66	1.41
Pretest	3.21	1.53	3.24	1.46	3.28	1.58

A dependent (paired) *t*-test on the students' pretest and posttest scores for each saving behavior by source of income was likewise conducted to determine if the different FLEP group exposures produced significant changes. Results of the dependent *t*-tests are shown in Table 5.32.

Table 5.32

Results of Dependent t-Tests for Savings Behaviors by FLEP Groups

Savings behavior by source of money	Two Module *n* = 54		Two + Module *n* = 125		Three Module *n* = 66	
	Mean Diff	*t (df)*	Mean Diff	*t (df)*	Mean Diff	*t (df)*
Plain allowance	0.32	1.97	0.03	0.23	0.18	1.74
	(0.86)	(27)	(1.06)	(70)	(0.65)	(37)
Pay for odd jobs	0.34	2.78**	0.30	3.19**	0.26	2.04*
	(0.70)	(31)	(0.78)	(70)	(0.79)	(38)
Allowance for chores	0.53	3.06**	0.34	4.15***	0.15	1.93
	(0.98)	(31)	(0.78)	(86)	(0.57)	(52)
Money gift	0.12	1.23	0.23	3.50**	0.38	3.22**
	(0.68)	(51)	(0.72)	(122)	(0.96)	(64)

Note: Standard deviation is in parenthesis below the mean difference. Degrees of freedom are in parenthesis below the *t*-statistic.
*$p < .05$; ** $p < 01$; *** $p < .001$

Across all FLEP groups, there was no significant change in saving money from plain allowance but there was a significant increase in saving of the money earned from odd jobs. These results were consistent with research findings that children of this age group tend to save more of their earnings but less of their allowance (Koonce, et al., 2008; Doss, Marlowe & Godwin, 1995).

Improvement in savings behavior for money received from allowance for chores and gift money was not significant for all groups. Increase in saving money from allowance for chores was significant for Two Module and Two+ Module groups but not for Three Module group. Increase in money saved from gift money was significant for Two+ Module and Three Module groups but not for Two Module group. Doss, Marlowe & Godwin (1995) in their study on the sources and uses of money by middle school students (83% were 11-13 years of age) found that the level of savings was not associated with the amount of money they receive as gifts, personal characteristics and family situation.

5.4 Intervening Factors

This section presents the data that constitutes the factors outside of the FLEP that have been shown to influence the students' financial competence. Termed as intervening variables, these factors include parental influence, peer influence, access to money, job outside the home, and other sources of financial literacy. Some of these variables likely affected the participants' financial outcomes along with the impact directly attributed to participation in the FLEP.

Examining student distributions in each intervening variable category by the FLEP groupings could provide some indication whether the students' contexts made them equivalent groups. The inclusion of intervening variables recognizes the fact that students had various sources and influences in building up their financial competence with or without the school-based FLEP.

The theory of financial socialization states that the transfer of financial attitudes, values, standards, or behaviors occurs within the context of the family where the parents are the primary agents (Danes, 1994). Research (Gutter, Copur & Garrison, 2010; Shim, Barbers et al., 2009) has shown that "social learning opportunities" (in the family, among peers and having a job) play a role in gaining financial competence. In this study, the following intervening variables were considered:

- Parent influence (direct teaching, parent reinforcement, students' perceived financial behavior of parents or modeling)
- Peer influence (perceived peers' expense management, spending, club memberships, jobs outside the home, educational aspiration)
- Having jobs outside the house

In addition, asset-based theory (Sherraden, 2001) suggested that financial assets (or access to these) were among the important building blocks of financial competence aside from human and social assets. Thus in this study, the following intervening variable was also considered:

- Students' access to financial resources (savings, allowance, borrowings, wages)

Other sources of financial literacy were likewise included:

- Other sources of financial literacy (FLE courses outside the school, internet/books)

5.4.1 Parental Influence

The influence of parents was categorized in three dimensions. The first dimension is parent teaching involving the direct instruction of parents about financial concepts, beliefs and behaviors. A parent's informal discussions about banking concepts, budgeting and importance of saving could increase the child's financial knowledge, belief and behavior. Studies have found that parent teaching their children personal finance was important and effective (Koonce et al., 2008; Danes, 1994).

The second dimension is parent reinforcement having to do with expectations and motivations about what in their view are good financial beliefs and behaviors. Children's financial skills and habits could be forged with teaching and reinforcement. For example, a parent could discuss with the child what saving is all about and expect the child to save. To reinforce the habit of saving, the parent would be willing to drive the child to the bank to deposit and withdraw the child's money.

The third dimension is perceived parent behavior: observations of students regarding financial practices of their parents. For instance, children may notice when parents track their monthly expenses or spend within their budget. Mere observation of how expenses are curbed could be a learning moment.

For each of the items comprising the dimensions of the parental influence measure, students were asked how often their parents did what the statement indicated. They selected from a five-point scale: 1 = not really, 2 = a few times, 3 = sometimes, 4 = many times, or 5 = a lot of times. Table 5.33 summarizes the frequency distribution of responses, and the mean and standard deviation for each item.

Table 5.33

Frequency Distribution of Responses, Mean and Standard Deviation for Each Item Comprising the Dimensions of Parental Influence Measure

Items Under Each Parental Influence Dimension	Response Options						
	Not really	Few times	Sometimes	Many times	A lot of times	*M*	*SD*
Parent teaching							
banking concepts	26.5	24.1	31.8	11.8	5.7	2.46	1.17
budgeting with me	26.5	22.0	27.3	16.7	7.3	2.56	1.25
importance of saving	7.8	12.2	26.9	28.2	24.9	3.50	1.21
how to save	10.6	14.3	29.8	26.5	18.8	3.29	1.23
how to invest	41.2	20.4	18.4	11.0	9.0	2.26	1.34
how money should be spent	8.2	14.3	25.3	29.4	22.9	3.44	1.22
Parent reinforcement							
expect me to save	6.1	8.6	22.4	27.8	35.1	3.77	1.19
bring me to bank	39.2	15.1	18.4	13.1	14.3	2.48	1.47
approve my use of money	14.7	13.9	31.4	24.5	15.5	3.12	1.26
Perceived parents' behavior							
save regularly	10.6	9.8	23.3	25.7	30.6	3.56	1.30
track expenses	13.9	7.8	15.5	26.5	36.3	3.64	1.40
spend within budget	6.9	3.7	10.6	36.7	42.0	4.03	1.14
avoid overspending	6.1	6.1	10.2	33.5	44.1	4.03	1.16
use bank	13.5	12.7	25.7	22.9	25.3	3.34	1.34

Based on the distribution of responses and the means on the summary Table 5.33, parent teaching often dealt with the *importance of saving*, *how money should be spent*, and *how to save*. Some students revealed that they have already learned from their parents how to save money. Parent teaching was least experienced by the students in matters about *how to invest*, *banking concepts* and *budgeting*.

Students reported that parent reinforcement was most felt in parents' expectation for them to save and voicing their approval of how money is used. It was least experienced by students in terms of bringing them to the bank so they can deposit and withdraw their money. In fact, 39% of the students indicated that their parents *did not really* bring them to the bank. The information that 34% of this school's eighth graders were economically disadvantaged could mean that some of these parents were unbanked or had minimal interactions with financial institutions.

In general, the students gave scores above the midpoint of 3 (*sometimes*) when asked about their parents' financial behavior. The most obvious behaviors the students had seen their parents do were to *spend within the budget* and *avoid overspending*. After the Math Fair, the students were likely more aware of their parents' financial practices. One parent noted: "She has a greater understanding and appreciation of what it takes to run a household budget and make ends meet."

As seen in Table 5.34, the similarity in mean scores of the personal finance subjects taught by parents in each FLEP group seems to suggest that parent groups emphasized the same matters to their children. *Importance of saving* and *how to save* mattered the most and *how to invest* was the least discussed. Savings behavior is reinforced the most and the trip to bank the least. Students in all groups put *spending within the budget* and *avoid overspending* as the most often observed behavior.

Table 5.34

Mean and Standard Deviation for Each Item Comprising the Dimensions of Parental Influence Measure for Each FLEP Group

	FLEP Grouping							
	Two Module		Two+ Module		Three Module		All FLEP Groups	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Parent teaching								
banking concepts	2.48	1.14	2.46	1.12	2.45	1.29	2.46	1.17
budgeting with me	2.61	1.22	2.53	1.25	2.59	1.28	2.56	1.25
importance of saving	3.59	1.09	3.54	1.21	3.35	1.29	3.50	1.21
how to save	3.35	1.25	3.35	1.18	3.11	1.30	3.29	1.23
how to invest	2.30	1.37	2.24	1.31	2.27	1.38	2.26	1.34
how money should be spent	3.54	1.21	3.48	1.22	3.30	1.23	3.44	1.22
Parent reinforcement								
expect me to save	3.85	1.31	3.74	1.15	3.76	1.19	3.77	1.19
bring me to bank	2.31	1.52	2.46	1.47	2.65	1.43	2.48	1.47
approve my use of money	3.06	1.20	3.17	1.25	3.09	1.33	3.12	1.26
Perceived parents' behavior								
save regularly	3.48	1.33	3.50	1.35	3.74	1.19	3.56	1.30
track expenses	3.48	1.46	3.62	1.42	3.79	1.31	3.64	1.40
spend within budget	4.24	1.10	3.92	1.18	4.08	1.09	4.03	1.14
avoid overspending	4.19	1.15	3.91	1.19	4.14	1.09	4.03	1.16
use bank	3.24	1.23	3.31	1.43	3.47	1.27	3.34	1.34

The three dimensions of parental influence were constructed as composite scales of the items that comprise them. Parental teaching was a 7-item scale, parent reinforcement a 3-item scale and perceived parents' behavior a 5-item scale. Research has used scales to analyze parent influence contributions to financial knowledge, skills and values of college students (Shim, Barber et al., 2009; Shim, Xiao et al., 2009). Internal consistency for each scale was assessed *post hoc* using Cronbach's alpha and mean inter-item correlations comprising each dimension. The results of these tests are summarized in Table 5.35. It shows that, the 5-item parent teaching scale is good one for measuring parental instruction of diverse financial matters to their children based on a coefficient alpha value of .87 and moderate to strong (range =.39 - .72) inter-item correlation with a mean of .52.

Table 5.35

Parental Influence Scales' Item Characteristics and Internal Consistency Reliabilities

Parental Influence	Scale Composite score		Inter-item correlation	Corrected-to-total correlation	Coefficient α if item deleted	Cronbach's
	M	***SD***	**Mean (Range)**	**Range**	**Range**	**α**
Parent teaching	17.52	5.74	.52 (.39 - .72)	.56 - .72	.83 - .86	.87
Parent reinforcement	9.38	2.94	.34 (.31 - .37)	.39 - .44	.46 - .53	.60
Parent behavior observed	18.56	5.07	.53(.42 - .70)	.56 - .70	.80 - .84	.84

For the 3-item parent reinforcement scale, coefficient alpha was .60. This low alpha value necessitated an examination of the characteristics of its constituent items. First, the range of the scale's mean inter-item correlations fell within the acceptable range of .15 to .20 for a broad construct such as the parental reinforcement construct (Clark & Watson, 1995; Spiliotopoulou, 2009). In fact, the inter-item Pearson correlations were all significant, $p < .001$. Second, the range of values in "corrected-to-total correlation" column showed moderate correlations of each item to the summated mean of the other items, higher than the lowest acceptable benchmark of .3. Third, the range of "coefficient alpha if items deleted" revealed that none of the items if removed from the scale increased the estimated coefficient alpha for the remaining items. These three results

suggested that the parent reinforcement scale was internally consistent and can be used as a composite intervening variable to detect its contribution to the improvement in financial measures. Further studies could improve the reliability of this scale by increasing the number of items that constitute it (Voss, Stem & Fotopoulos, 2000).

The 7-item perceived parent behavior scale's good coefficient alpha value of .84 and a moderate to strong inter-item correlation range with a mean of .53 made it a good scale. The scale's composite score could be considered a reliable intervening variable to test how it modifies the intensity of the financial outcome on the students who participated in the FLEP.

Internally consistent and reliable, the parental influence scales: parent teaching, parent reinforcement and perceived parents' behavior would be used as intervening variables to test whether they modified the changes in financial outcome of the FLEP participants.

An analysis of variance was conducted to determine if parental influence context differ between FLEP groups. In Table 5.36, the results of the ANOVA revealed that the mean differences between groups were not statistically significant and the effect sizes were very small, less than 1%. The values of *F* statistic were below one. Hence, there were no significant differences in parent financial teaching, reinforcement and perceived behaviors between one FLEP group and another.

Table 5.36

Summary Table of ANOVA for Parental Influence Factor by FLEP groups

Parental Influence Scales	FLEP Grouping			*F*	η_p^2
	Two Module (*n*=54)	Two + Module (*n*=125)	Three Module (*n*=66)		
Parent teaching	17.87 (5.30)	17.60 (5.62)	17.08 (6.32)	0.31 [2, 242]	.003
Parent reinforcement	9.22 (3.03)	9.38 (2.86)	9.50 (3.05)	0.13 [2, 242]	.001
Parent behavior observed	18.63 (4.62)	18.18 (5.40)	19.21 (4.79)	0.89 [2, 242]	.007

Note. Standard deviations appear in parentheses below means. Means with differing subscripts within rows are significantly different at the $p < .05$ based on Tukey-Kramer *post hoc* tests. Degrees of freedom appear in brackets below *F*-statistic.

Baseline (pre-FLEP) financial knowledge, belief, self-efficacy and behaviors were likely to be directly and indirectly influenced by their parents (Danes, 1994). One way to determine the relationship between parental influence and baseline financial outcomes was by conducting Pearson correlations between them. The results of the correlations are shown in Table 5.37.

The relationship between parental influence dimensions and mean pretest financial measure scales differed across FLEP groups. For the Two+ Module group, parent influence was observed to be strong, positive and consistently significant in all of the financial measures studied: baseline financial knowledge, belief, self-efficacy and behavior.

Table 5.37

Pearson Correlation between Mean Pretest Financial Measure Scales and Parental Influence Scales for Each FLEP Group

	Two Module			Two + Module			Three Module		
Financial Measures	1	2	3	1	2	3	1	2	3
Post-FLEP									
Financial Quiz	.10	.02	.27*	.15	.12	.10	.22	.34**	.03
Financial knowledge	.10	.05	.31*	.37**	.28***	.23*	.29*	.25*	.0
Financial belief	.39**	.12	.43***	.44***	.41***	.45***	.32**	.31*	.40***
Financial self-efficacy	.38**	.32*	.31*	.52***	.47***	.35***	.26*	.25*	.25*
Financial behavior	.22	.21	.27*	.46***	.38***	.23*	.41***	.33**	.17
Pre-FLEP									
Financial knowledge	.21	.0	.42**	.30**	.32**	.37**	.30*	.12	.09
Financial belief	.38**	.22	.44**	.38**	.27**	.43**	.34**	.31*	.35**
Financial self-efficacy	.27	.23	.25	.38**	.43**	.41**	.28*	.27*	.13
Financial behavior	.18	.20	.22	.37**	.35**	.24**	.41**	.28*	.14

Note: Numbers below FLEP Groups designate parental influence dimensions: 1 = Parent teaching. 2 = Parent reinforcement. 3 = Perceived parent behavior

*p < .05. **p < .01. ***p < .001.

For the Two Module's pretest coefficients, there were three positive and significant correlations: financial knowledge with perceived parental behavior, financial belief with parent teaching, and financial belief with perceived parental behavior. For the Three Module group, financial knowledge correlated significantly with parent teaching and financial belief correlated significantly with all dimensions of parental influence. Both financial self-efficacy and behaviors correlated positively and significantly with parental teaching and reinforcement.

5.4.2 Peer Influence

The influence of peers on the students' various financial capability measures had been considered in previous research (Gutter, Eisen & Way, 2009). In this study, it was assumed that the students' financial capability reflected that of their peers. The frequency distributions of responses to statements on peer influence are shown in Table 5.38.

Table 5.38

Frequency Distribution for Peer Influence Variables by FLEP Grouping

	FLEP Grouping			
	Two Module	Two+ Module	Three Module	All FLEP Groups
Peers' expense management	*(n = 53)*	*(n = 125)*	*(n = 64)*	*(N = 242)*
1 Do not see if they do	56.6	42.4	50.0	47.5
2 Very few times	13.2	20.0	29.7	21.1
3 Sometimes	18.9	28.8	12.5	22.3
4 Many times	7.5	8.0	4.7	7.0
5 A lot of times	3.8	0.8	3.1	2.1
Perceived peer spending	*(n = 52)*	*(n = 119)*	*(n = 60)*	*(N = 231)*
1 Spend too much	26.9	49.6	48.3	44.2
2 Spend just right	63.5	44.5	43.3	48.5
3 Spend very little	9.6	5.9	8.3	7.4
Peers' club membership	*(n = 53)*	*(n = 125)*	*(n = 65)*	*(N = 243)*
1 Don't know	66.0	64.8	66.2	65.4
2 Few of my friends	24.5	24.0	27.7	25.1
3 Some of my friends	9.4	9.6	4.6	8.2
4 Most of my friends	0	1.6	1.5	1.2
5 All of my friends	0	0	0	0
Peers had jobs	*(n = 53)*	*(n = 125)*	*(n = 65)*	*(N = 243)*
1 Don't know	35.8	39.2	40.0	38.7
2 Few of my friends do	52.8	46.4	47.7	48.1
3 Some of my friends do	5.7	14.4	9.2	11.1
4 Most of my friends do	5.7	0	3.1	2.1
5 All of my friends do	0	0	0	0
Peers' educational plan	*(n = 53)*	*(n = 124)*	*(n = 64)*	*(N = 241)*
1 Finish high school	13.2	8.1	7.8	9.1
2 Trade school certificate	0	0.8	3.1	1.2
3 Associate degree	17.0	12.9	17.2	14.9
4 College degree	50.9	59.7	59.4	57.7
5 Post grad/ professional	18.9	18.5	12.5	17.0

Note: Numbers before the response options listed under each peer influence variable designate the codes.

In "peers' expense management," students were asked how often they observed how their friends manage their expenses and avoid overspending. In response, they selected from five options:

1 = do not see if they do, 2 = very few times, 3 = sometimes, 4= many times, and 5 = a lot of times. Almost half of the students did not see if their friends managed their expenses. Conceptually, this fact weakened the power in using this variable for subsequent analysis. However, for most of those who had observed their friends, this behavior was seen very few times or sometimes.

"Perceived peer spending" asked students to gauge if their friends: 1 = spend too much, 2 = spend just right or 3 = spend too little. It was noticed that there were about 14 missing data, either left blank or students indicated that they did not know. If an option, "don't know" were added, more students were likely to have selected it. Based on the responses, about 64% of the students from Two Module thought that their friends spend just right. For students from the other two groups, around 50% of them thought that their friends spend too much and about 45% thought that they spend just right.

In peers' club membership, students were asked what proportion of their friends were member of clubs like the 4H Club, Boy & Girls Club and others. They selected from 5 options: 1 = don't know, 2 = few of my friends, 3 = some of my friends, 4= most of my friends, and 5 = all of my friends. About 66% of the students did not know. This fact weakens the use of this variable for subsequent analysis. If option 1 were taken as missing data, the number of cases would be greatly reduced, and the results of parametric analysis that include this variable would be unstable. For students who knew their peer's club memberships, around 25% indicated that few of their friends were members of associations.

The fourth variable, peers had jobs, asked the students what proportion of their friends had jobs by selecting from 5 options: 1 = don't know, 2 = few of my friends do, 3 = some of my friends do, 4= most of my friends do, and 5 = all of my friends do. About 40% of the students did not know and around 50% indicated that few of their friends do.

Lastly, the peers' educational plan asked the students for the highest level of schooling that most of their friends wanted to acquire. They selected from five options: 1 = finish high school, 2 = trade or vocational school certification, 3 = 2-year college or associate degree, 4 = college degree, or 5 = post graduate (professional, medicine, law, PhD, Masters). The students knew the educational plans of their friends in school because they discussed these during Career Investigation' activities. Many of them submitted themselves to simulated job interviews that were carried out in front of the class. Almost 60% of the students indicated that most of their friends plan to go to college; about 17% to post graduate studies and 15% to get an associate degree. As levels of education have been closely associated with socioeconomic status, this variable could be used as its proxy. Aspirations of pursuing higher education are likely indicate that their families belong to a higher socioeconomic class. The means for peer influence variables are shown in Table 5.39.

Table 5.39

Means and Standard Deviations of Peer Influence Variables by FLEP Group and All Groups

	Two Module		Two+ Module		Three Module		All FLEP Groups	
Peer Influence Variables	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Expense management	1.89	(1.19)	2.05	(1.05)	1.81	(1.04)	1.95	(1.08)
Perceived spending	1.83	(0.58)	1.56	(0.61)	1.60	(0.64)	1.63	(0.62)
Club membership	1.43	(0.67)	1.48	(0.74)	1.42	(0.66)	1.45	(0.70)
Had jobs	1.81	(0.79)	1.75	(0.69)	1.75	(0.75)	1.77	(0.73)
Educational plan	3.62	(1.20)	3.80	(1.02)	3.66	(1.01)	3.72	(1.06)

It was not possible to construct a peer influence scale because substantial numbers of students did not know their friends well enough to answer the questions about peer influence. Thus, each item will be considered as individual variables in subsequent analyses.

The means for peer influence variables, shown in Table 5.39 were subjected to ANOVAs to determine if peer influence differed between groups. Only the mean difference for perceived peer spending was significant, as indicated by the Brown-Forsythe statistic, $F(2, 173.5) = 3.48$, $p = .033$. The Games-Howell *post hoc* test revealed that the Two Module group's mean was significantly higher (p =

.023) than that of the Two+ Module group's but not significantly higher than that of Three Module group (p = .13). There was no statistically significant mean difference between Two+ Module and the Three Module groups, p = .93. Hence, peer influence across FLEP groups showed practically no difference from each other.

Pearson correlations between each of the peer influence variables with the pre-FLEP financial measures were conducted. The results in Table 5.40 show the correlation coefficients of financial outcome scales with "peers' expense management" and "perceived peer spending." Only the Two Module group's correlation coefficients were positive and significant between "peers' expense management" and pre- FLEP financial knowledge and post-test financial knowledge, belief and behavior. No significant correlations were posted for the variable "perceived peer spending" and any of the financial outcome scales before and after the FLEP.

Table 5.40

Pearson Correlation between Financial Outcome Measures and Peer Influence Variables: Peers' Expense Management and Perceived Peer Spending for Each FLEP Group

	Two Module		Two + Module		Three Module	
Financial Measures	1	2	1	2	1	2
Post-FLEP						
Financial Quiz	.13	.10	-.03	-.10	-.18	.12
Financial knowledge	.11	.13	.27**	.04	-.10	-.02
Financial belief	.13	.16	.21*	.06	.21	.12
Financial self-efficacy	.01	.16	.18	.00	.23	.10
Financial behavior	.12	-.18	.19*	.04	.18	.11
Pre-FLEP						
Financial knowledge	-.08	.03	.23*	.0	-.04	-.03
Financial belief	-.06	.01	.08	-.02	.11	-.07
Financial self-efficacy	-.15	.16	.14	.03	.13	-.03
Financial behavior	-.02	-.23	.15	.03	.11	-.04

Note: Numbers below FLEP Groups designate other sources of financial literacy: 1 = Peers' expense management. 2 = Perceived peer spending
*p < .05. **p < .01. ***p < .001.

The correlations between financial outcome scales and each of the peer influence variables: "peers' club membership," "peers had jobs" and "peer's educational plan" are presented in Table 5.41. The variable, "peer's club membership" was correlated to Two+ Module's financial self-efficacy

and behavior. This implied that greater peer social interaction translated to enhancement of these two financial variables. The strength of the relationships seemed to slightly increase after the FLEP.

The variable "peers with jobs" was prominent in Two+ Module's pre-FLEP financial measure levels, all of which posted positive and significant correlation coefficients. This indicated that having peers with jobs positively influenced the level of financial knowledge, belief, self-efficacy and behavior. The relationships appeared to weaken after the FLEP.

Table 5.41

Pearson Correlation between Mean Financial Outcome Scales and Peer Influence Variables: Peers' Club Membership, Peers had Jobs, and Peers' Educational Plan for Each FLEP Group

	Two Module			Two + Module			Three Module		
Financial Measures	3	4	5	3	4	5	3	4	5
Post-FLEP									
Financial Quiz	.21	.13	.32*	.05	.12	.10	.25*	-.04	.10
Financial knowledge	-.05	.30*	.19	.19*	.19*	.10	.06	.11	.22
Financial belief	-.22	.06	.25	.11	.11	.02	.15	.04	.37**
Financial self-efficacy	-.03	.04	.21	.28**	.19*	-.16	.18	-.07	.34**
Financial behavior	.04	.06	-.11	.30***	.11	-.20*	.14	.12	.43***
Pre-FLEP									
Financial knowledge	-.21	.11	.29*	-.07	.25**	.20*	-.02	.23	.03
Financial belief	-.15	.01	.38**	.05	.21*	.19*	.06	.07	.20
Financial self-efficacy	-.05	.02	.38**	.23**	.29**	.09	.13	-.04	.30*
Financial behavior	-.01	-.05	.03	.28**	.18*	-.01	.13	.16	.39**

Note: Numbers below FLEP Groups designate peer influence variables: 3 = Peers' club membership. 4 = Peers had jobs. 5 = Peer's educational plan
*p < .05. **p < .01. ***p < .001.

As seen in Table 5.41, "peers' educational plan" correlated positively and significantly with baseline financial knowledge and belief for Two and Two+ Module groups but not for Three Module. Associating this variable to socioeconomic class would lead to the conclusion that the higher the peer's socioeconomic class was, the higher the levels of baseline financial knowledge and beliefs were. Correlation with financial self-efficacy was significant and positive for the Two and Three Module groups, but not Two+ Module. Financial behavior was significantly and positively correlated with this peer influence variable only for the Three Module group.

However, the relationship between post-FLEP financial behavior and "peers' educational plan" was significant and negative for Two+ Module. This result implied that the lower the peer' socioeconomic class was, the higher the levels of post-FLEP financial behavior was. For Three Module, the correlations of this variable with post-FLEP financial belief, self-efficacy and behavior were stronger and very significant than the parallel relationships with pre-FLEP measures.

5.4.3 Had jobs outside the house

Students indicated if they had odd jobs (coded as 1= had odd jobs and 0=did not) and/or held part-time employment (coded as 1= held part-time employment and 0=did not). Odd jobs are informal and undocumented work like babysitting, chores and the like. Part-time employment is formalized with an employee-employer contract like in a supermarket or a library; and subject to state labor laws covering minors. The frequency distribution is summarized in Table 5.42. The mean closely resembled the percentage of students who "had jobs" and "employed part-time" because of how these dichotomous variables were coded. About 24% to 45% of the students had odd jobs but only about 7% to 17% were employed part-time.

Table 5.42

Frequency Distribution, Mean and Standard Deviation Variables Indicating if Students Had Jobs outside the House for Each FLEP Group

Sources of Access to Money	Two Module (*n* = 53)		Two+ Module (*n* = 125)		Three Module (*n* = 65)		All FLEP Groups (*N* = 243)	
	%of n	*M*	*%of n*	*M*	*%of n*	*M*	*%of N*	*M*
Had odd jobs	24.1	0.25 (0.43)	32.0	0.32 (0.47)	44.6	0.45 (0.50)	33.5	0.34 (0.47)
Employed part-time	7.4	0.08 (0.27)	13.6	0.14 (0.34)	16.9	0.17 (0.38)	13.1	0.13 (0.34)

Taking on odd jobs were reported by 24% of students in Two Module, 32% in Two+ Module and 45% in Three Module. Part-time employment was less common as posted by 7% of students in Two Module, 24% in Two+ Module and 17% in Three Module. Earning money was considered both a source of money and financial information. Having jobs has been associated with better financial

literacy of high school students (Shim, Barber, et al., 2009). In this study of eighth graders, the relationship between having a job and the financial outcome measures was examined by performing bivariate Pearson correlations.

The results of the correlations are shown in Table 5.43. Because of dichotomous coding of the "had odd jobs" and "employed part-time" where 1 = had jobs and 0 = none, a positive coefficient indicated that students who had jobs on the average had a better financial outcome than those who did not. If it was negative, then those who did not have jobs had a better financial outcome than those who had. A statistically significant coefficient suggested that the mean difference in a specific financial outcome between those who had jobs and those who did not, was significant.

Readers, who are interested in the actual pre- and post-FLEP levels of a financial outcome and their corresponding mean differences between those who had jobs and those who did not, could perform an independent sample *t*-test. In SPSS, each financial outcome scale, for example, Two Module's post-FLEP financial knowledge was inputted as the test variable. Then, each variable in "had jobs outside the house" such as, "had odd jobs," was inputted as the grouping variable. For this example, the SPSS output contained the mean and standard deviation of post-FLEP financial knowledge, $M = 17.2$, $SD = 2.7$ for those who had odd jobs and $M = 15.4$, $SD = 3.1$ for those who did not. The mean difference in post-FLEP financial belief, $M = 0.80$, $SE = 1.03$, was statistically significant, $t(123) = 3.2$, $p = 0.002$. The result of this independent *t*-test coincided with the significant relationship between Two+ Module's post-FLEP financial knowledge and "had odd jobs" variable, $r(123) = .28$, $p = 0.002$, as the Pearson coefficient shown in Table 5.43.

The results in Table 5.43 show that Two+ Module students posted significant positive associations between "had odd jobs" and levels of both pre-and post FLEP financial belief, self-efficacy and behavior. It also shows that after the FLEP, the relationship between these variables was slightly stronger than before the FLEP and additionally, the correlation between "had jobs" with

financial knowledge was significant. In other words, significant mean differences in financial outcomes were indicated in Two+ Modules' financial belief, self-efficacy and behaviors where students who "had odd jobs" were better than those who did not. Another pattern to note is that in this FLEP group's "had odd job" column, the strength of the correlations increased from the pre-FLEP to the post-FLEP. This pattern indicated that after participating in the FLEP, those who had odd jobs improved more than those that did not.

Table 5.43

Pearson Correlation between Mean Financial Outcome Scales and Variables Indicating if Students Had Jobs outside the House for Each FLEP Group

	Two Module		Two + Module		Three Module	
Financial Measures	1	2	1	2	1	2
Post-FLEP						
Financial Quiz	.09	.11	.09	-.02	-.09	-.09
Financial knowledge	.11	.19	.28**	.14	-.05	.09
Financial belief	.02	.18	.23**	.05	.10	-.07
Financial self-efficacy	-.03	.24	.27**	.20*	.27*	.0
Financial behavior	.24	.13	.23*	.18*	.24	-.16
Pre-FLEP						
Financial knowledge	-.14	.23	.12	.12	.08	.26*
Financial belief	-.14	.12	.18*	-.02	.25*	.08
Financial self-efficacy	-.21	.23	.21*	.12	.29*	.12
Financial behavior	.09	.20	.19*	.25**	.22	-.07

Note: Numbers below FLEP Groups designate jobs outside the house: 1 = Had odd jobs. 2 = Employed part-time
*$p < .05$. **$p < .01$.

For Three Module students, significant positive Pearson coefficients between "had odd jobs" and levels of pre-FLEP financial belief, self-efficacy and behavior suggested significant mean difference in these financial outcomes where students with odd jobs fared better than those that did not. The only significant correlation coefficient among the post-FLEP financial outcomes was that of financial self-efficacy and "had odd job." On inspection of this FLEP group's "had odd job" column, the strength of the correlations with financial decreased from the significant pre-FLEP value of $r = .25$, $p < .05$ to the post-FLEP value of $r = .10$, *n.s*. This observation indicated that after participating in the FLEP, those who did not have odd jobs improved more than those that did not, closing in the gap in mean differences for the post-FLEP financial belief compared to that of the pre-FLEP levels.

Very few held part-time work, however, so that may explain why the correlations were found to be very weak and not significant in general. Significant positive associations were detected for 14% of students in Two+ Module's pre-FLEP financial behavior and its post-FLEP financial self-efficacy and behavior. For 17% of students in Three Module, only the relationship between "employed part-time" and pre-FLEP financial knowledge was positive and significant. These positive correlations meant that students with part-time employment had significantly better financial outcomes in these aspects than those who did not. However, the small number of those who were employed part-time did not make these correlations stable and thus made detection of mean differences inconclusive.

5.4.4 Students' Access to Financial Resources (savings, allowance, borrowings, wages).

Students were asked to select from a list of sources from which they accessed money. The frequency distribution in Table 5.44 shows the percentage of students by sources of access to money for each FLEP group.

Table 5.44

Frequency Distribution, Mean and Standard Deviation of Variables Indicating the Source of Money Students Had Access

Sources of Access to Money	Two Module (*n* = 54)		Two+ Module (*n* = 125)		Three Module (*n* = 65)		All FLEP Groups (*N* = 244)	
	%of n	*M*	*%of n*	*M*	*%of n*	*M*	*%of N*	*M*
Had savings account	59.3	0.59 (0.50)	64.8	0.65 (0.48)	70.8	0.71 (0.46)	64.9	0.65 (0.48)
Had savings at home	83.3	0.83 (0.38)	80.0	0.80 (0.40)	87.7	0.88 (0.33)	82.4	0.83 (0.38)
Got plain allowance	5.6	0.06 (0.23)	15.2	0.15 (0.36)	15.4	0.15 (0.36)	13.1	0.13 (0.34)
Got allowance for chores	44.4	0.44 (0.50)	46.4	0.46 (0.50)	58.5	0.58 (0.50)	49.0	0.49 (0.50)
Borrowed money	64.8	0.65 (0.48)	82.4	0.82 (0.38)	73.8	0.74 (0.44)	75.9	0.76 (0.43)
Wages from odd jobs	24.1	0.24 (0.43)	26.4	0.26 (0.44)	38.5	0.38 (0.49)	29.0	0.29 (0.46)
Wages for part-time employment	9.3	0.09 (0.29)	4.0	0.04 (0.20)	7.7	0.08 (0.27)	6.1	0.06 (0.24)

Note. Standard deviations appear in parentheses below means.

The mean closely resembled the percentage of students who accessed money from a specific source because of how these variables were coded, *1 = access to money from particular source and 0*

= *no access from particular source*. About 60% to 70% of students across FLEP groups had a savings account and around 80% to 88% had savings at their homes.

A low of 6% to about 15% of students get plain allowance. But 45% to 60% of students received an allowance for chores. New England people are known to be more self-reliant than the rest of the US population. Earning money could be one way of training young children about self-reliance. It could also be a function of the downturn of the economy, in which parents are making their children earn than feel entitled to an allowance.

Borrowed money was a quite common source for 65% to 83% of the students. Furnham's (1999) study on monetary and economic attitudes and behaviors of British 11-16 year olds also found this to be so. Wages from odd jobs were earned by 25% to 40% of the students. But less than 10% earned salaries from part-time employment.

Access to financial resources had been hypothesized to be associated with better financial literacy and behavior. But for children of this age range (13-14 years old), there were mixed results (Doss, Marlowe & Godwin, 1995; Alhabeeb, 1996; Mortimer, Dennehy, Lee & Finch, 1994). To examine whether there was a relationship between access to money and financial outcome measures, Pearson correlations were performed. The results of the correlations are shown in Table 5.45 for money from savings, Table 5.46 for money from allowance, and Table 5.47 for money from borrowings and wages.

The general patterns of the Pearson coefficients between "access to money" variables and the pre-FLEP and post-FLEP financial outcome levels may provide some insight about their relationships to financial outcome measures. Access or no access to a particular source of money could be associated to better financial outcomes. Earlier, it was observed that in general, students saved more of what they earned and spent more of money they don't have to work for.

The relationships between financial outcome levels and money from savings (savings account and savings at home) are shown in Table 5.45. As can be seen under the "savings account" columns, the relationships between having a "savings account" and financial outcomes were all positive, except for a non-significant and very weak relationship with Three Module's post-FLEP financial quiz (r = -.05, n.s.). These positive correlations suggested that before the FLEP, those who owned savings accounts had better financial knowledge, belief, self-efficacy and behaviors that those who do not.

Table 5.45

Pearson Correlation between Financial Outcome Measures and Students' Access to Money from Savings

	Two Module		Two + Module		Three Module	
Financial Measures	1	2	1	2	1	2
Post-FLEP						
Financial Quiz	.20	.12	.07	.10	-.05	-.01
Financial knowledge	.23	.01	.24**	.19*	.12	.13
Financial belief	.27*	.08	.09	.19*	.21	.32**
Financial self-efficacy	.39**	-.09	.18*	.28***	.09	.45***
Financial behavior	.11	.15	.07	.24**	.13	.29*
Pre-FLEP						
Financial knowledge	.22	-.15	.31***	.14	.15	.11
Financial belief	.26	-.09	.23**	.09	.14	.19
Financial self-efficacy	.34*	-.12	.16	.15	.03	.35**
Financial behavior	.12	.09	.10	.14	.00	.24

Note: Numbers below FLEP Groups designate sources of money: 1 = Savings account. 2 = Savings at home
*p < .05. **p < .01. ***p < .001.

Pre-FLEP financial outcomes with moderate relationships were significant for Two Module's financial efficacy (r = .34, p < .05) and Two+ Module's financial knowledge (r = .31, p < .001) and belief (r = .23, p < .01). For the Three Module group, there were no significant mean differences in financial outcomes between those who had savings accounts and those who did not. After the FLEP, moderate associations were significant for Two Module's financial belief (r = .27, p < .05) and efficacy (r = .39, p < .01) as well as Two+ Module's financial knowledge (r = .24, p < .01) and self-efficacy (r = .18, p < .05). These positive relationships suggested that students with savings accounts had higher levels of those financial outcome measures than those without.

As can be observed in Table 5.45, there is an interesting trend between the pre- and post-FLEP correlations with "savings at home." After the FLEP, the relationships increased in strength (coefficients became more positive) and for Two+ Module and Three Modules, correlations became significant. These results indicated that after the FLEP, those who had savings at home improved in financial outcome measures significantly more than those who did not. It seems that students had more control over savings at home than a savings account which could have been opened for them by their parents. Tie this to the fact that around 55% of the student posted "not really" and few times" to whether their parents "bring [them] to the bank to deposit and withdraw their money" (Table 5.33).

The relationships between financial outcome measures and access to money from allowances (plain allowance and allowance for chores) are shown in Table 5.46. As observed from the percentage distribution in Table 5.44, a low of 6% of students in Two Module to about 15% of students in Two+ Module and Three Module got plain allowance. But 45% of students in Two Module and Two+ Module to 60% of students in Three Module received an allowance for chores.

Table 5.46

Pearson Correlation between Financial Outcome Measures and Students' Access to Money from Allowance

	Two Module		Two + Module		Three Module	
Financial Measures	3	4	3	4	3	4
Post-FLEP						
Financial Quiz	-.25	.21	.04	.21*	-.04	-.21
Financial knowledge	-.19	.02	.05	.01	-.18	-.05
Financial belief	-.14	.13	.08	.09	.07	.16
Financial self-efficacy	-.02	.18	.01	.20*	.03	.11
Financial behavior	-.06	-.06	-.07	.10	.18	.19
Pre-FLEP						
Financial knowledge	-.12	-.14	.01	.04	.04	-.03
Financial belief	-.27*	.11	.07	.10	.20	.10
Financial self-efficacy	-.04	.14	.11	.16	.15	.02
Financial behavior	-.08	-.10	-.05	.06	.18	.07

Note: Numbers below FLEP Groups designate sources of money: 3 = Plain allowance. 4 = Allowance from chores
*$p < .05$.

In the case of correlations under the "plain allowance" columns, the only significant relationship was a negative one with Two Modules' pre-FLEP financial belief, $r = -.27$, $p < .05$. This result indicated that the 5.6% of students in this FLEP group who got plain allowance posted significantly lower in pre-FLEP financial belief levels than those who did not. However, the small number of those who got plain allowance did not sufficiently make these correlations stable and thus made detection of mean differences inconclusive.

Under the "allowance for chores" columns, the only positive significant relationships were Two+ Modules' post-FLEP financial quiz $r = .21$, $p < .05$ and post-FLEP financial self-efficacy, $r = .20$, $p < .05$. These results suggested that the 46% of students in this FLEP group who got allowance for chores averaged significantly higher in these financial outcome levels than those who did not. Furnham (1999) had shown that the amount of allowance did not affect financial attitudes but what they did with the money.

The relationships between financial outcome levels and access to money from borrowings and wages (wages from odd jobs and pay from part-time employment) are shown in Table 5.47.

Table 5.47

Pearson Correlation between Financial Outcome Measures and Students' Access to Money from Borrowed Money and Wages

Post-FLEP	Two Module			Two + Module			Three Module		
Financial Measures	5	6	7	5	6	7	5	6	7
Post-FLEP									
Financial Quiz	.04	.04	-.09	.07	.11	.14	-.45***	-.01	.13
Financial knowledge	-.01	.17	.02	.01	.14	.12	-.13	.24	.15
Financial belief	-.03	.25	.02	-.07	.13	.04	-.06	.06	.07
Financial self-efficacy	-.12	.27*	.07	-.02	.12	.06	-.05	.09	.17
Financial behavior	-.17	-.02	.14	-.01	.17	.04	-.19	.16	.24
Pre-FLEP									
Financial knowledge	-.24	.16	.19	-.04	.08	.10	-.01	.31*	.23
Financial belief	-.21	.18	.20	-.04	.12	.04	-.04	.19	.17
Financial self-efficacy	-.19	.06	.10	-.01	.15	.12	-.08	.17	.22
Financial behavior	-.26	-.05	.26	.01	.10	.04	-.16	.16	.29*

Note: Numbers below FLEP Groups designate sources of money: 5 = Borrowed money. 6 = Wages from odd jobs. 7 = Pay from part-time employment.
*$p < .05$. **$p < .01$. ***$p < .001$.

As seen from the percentage distribution in Table 5.44, borrowed money was a quite common source of money for 65% of students in Two Module, 83% in Two+ Module and 76% in Three Module. As to access to money through wages from odd jobs, this was true for 24% of students in Two Module, 26% in Two+ Module and 39% in Three Module. But less than 10% earned salaries from part-time employment.

The most striking pattern observed in Table 5.47 is the negative relationships between financial outcomes and "borrowed money," which suggested that students who did not borrow money had better financial outcome levels compared to those who did. This was true across groups. The only significant relationship was a moderate to strong one with Three Modules' financial quiz, r = -.45, $p < .001$. This result indicated that the 26% of students in this FLEP group who did not borrow money averaged significantly higher in the financial quiz than those who did.

Earning wages from odd jobs were more common than part-time employment on account of their 13-14 year old age group. The New England State labor laws allow legal employment to minors, starting the age of 14 years.

"Wages from odd jobs" were moderately associated with Two Module's post-FLEP financial self-efficacy, r = .27, $p < .05$. This result suggested that the 24% of students in Two Module who got wages for odd jobs averaged significantly higher in post-FLEP financial self-efficacy levels than those who did not. The other significant relationship was Three Module's pre-FLEP financial knowledge, r = .31, $p < .05$. This positive relationship indicated that the 39% of students those who got wages from odd jobs averaged significantly higher in pre-FLEP financial knowledge than those who did not.

Under "pay from part-time employment," only Three Modules' pre-FLEP financial behavior posted a significant and moderate relationship, r = .29, $p < .05$. This indicated that the 8% of students in this FLEP group who got pay from part-time employment had significantly higher in pre-FLEP

financial behavior levels than those who did not. However, the small number of student doing this did not make these correlations stable and thus made detection of mean differences inconclusive.

There were more students who had odd jobs than getting paid for it. And having odd jobs are significantly correlated with financial outcomes but not so with getting wages from odd jobs. One possible explanation for this is that students can work in exchange for things or other services, not for money. It seems that those who work for money intend to buy some immediate "want" or "shop" for consumables or "go out with friends" rather than save for a future good. The finding that 75% of students borrowed money could mean that some students had to earn money to pay some debt.

5.4.5 Other Sources of Financial Literacy outside the School

Very few participated in financial literacy programs outside the school as could be seen in Table 5.48: 4% for Two Module, 13% for Two+ Module and 9% for Three Module. Consulting other references about personal finance rare as only 13% of the students in Two Module, 11% in Two+ Module and 20% in Three Modules, indicated that they did so.

Table 5.48

Frequency Distribution, Mean and Standard Deviation of Students' Other Sources of Financial Literacy

Other Sources of Personal Finance	Two Module (*n* = 53)		Two+ Module (*n* = 125)		Three Module (*n* = 65)		All FLEP Groups (*N* = 243)	
	%of n	*M*	*%of n*	*M*	*%of n*	*M*	*%of N*	*M*
FLE outside the school	3.8	0.04 (0.19)	12.8	0.13 (0.34)	9.2	0.09 (0.29)	9.8	0.10 (0.30)
Internet/books	13.2	0.13 (0.34)	11.2	0.11 (0.32)	20.0	0.20 (0.40)	13.9	0.14 (0.35)

The relationships between the variables indicating "other sources of financial literacy" and financial outcome levels are shown in Table 5.49. Very few of the students may have participated in out-of-school financial literacy programs, but as seen in the significant correlations in Table 5.49, the 12.8% of students from Two+ Module who did participate in FLE outside the school had significantly more positive pre-FLEP financial belief, better financial self-efficacy and behaviors than those that did

not. The same financial outcome measures in the post-FLEP correlations were weaker and not significant, which meant that those who did not go to out-of-school programs improved more than those who did. For the other two FLEP groups, there were not significant mean differences between those that did and did not attend non-school programs.

As shown in Table 5.48, learning financial matters from sources like books and the internet were reported by 13% of students in Two Module, 11% in Two+ Module and 20% in Three Module group. The significant mean difference in post-FLEP financial behavior was observed from Two Module, $r = .27$, $p < .05$, and Two+ Module, $r = .19$, $p < .05$, groups where students who consulted other references about personal finance had better financial behavior levels than those who did not.

Table 5.49

Pearson Correlation between Financial Outcome Measures and Students' Other Sources of Financial Literacy

	Two Module		Two + Module		Three Module	
Financial Measures	1	2	1	2	1	2
Post-FLEP						
Financial Quiz	.04	.12	-.08	-.02	.13	.07
Financial knowledge	.13	.02	.16	.16	.11	.05
Financial belief	.07	-.13	.13	.06	.10	.10
Financial self-efficacy	.09	-.03	.10	.15	.11	.04
Financial behavior	.20	.27*	.12	.19*	.19	.21
Pre-FLEP						
Financial knowledge	-.05	-.24	.17	.19*	-.04	.11
Financial belief	-.03	-.21	.28**	.08	-.02	.04
Financial self-efficacy	.19	-.01	.22*	.05	.09	.0
Financial behavior	.13	.19	.21*	.18	.22	.15

Note: Numbers below FLEP Groups designate other sources of financial literacy: 1 = FLE courses outside the school.
2 = Internet/ books
*$p < .05$. **$p < .01$. ***$p < .001$.

The limited number of those who participated in non-school financial literacy programs and those who studied other sources like books and the internet did not sufficiently make these correlations stable. Standard deviations were too big relative to the means of a small number of data points that made detection of mean differences inconclusive.

In summary, the intervening variables presented in this section and provided some context about factors outside of the FELP that could also influence the students' financial competence. These factors included parental and peer influence, access to money, having a job and other sources of financial literacy. Parental influence had the strongest positive correlation to the student's financial literacy and behavior. Having savings at home had a stronger positive influence on financial competence than maintaining a savings account possibly because students had more control over it. Money earned had a stronger positive influence on financial competence outcomes than money simply handed out to them. Socioeconomic status was positively associated with financial knowledge but negatively related to financial behavior possibly because wealthier student were less compelled to get a job and it is having a job that seems to improve financial competence.

Data on intervening variables would be used as predictors in the series of multiple regressions analyses in Section 7.3.1 to explain the variance of each of the post-FLEP financial outcomes. For example, the results of multiple regression analysis shown in Table 7.19 detected that "had a job" significantly predicted the level of post-FLEP financial knowledge, when the other predictors were controlled.

Reporting the Pearson correlation coefficients between a specific intervening variable and a particular posttest financial outcome was relevant because it provided the zero order correlation of the pair-wise relationship. The significant bivariate correlations did not imply causation. The use of multiple regressions in Section 7.3.1 would determine which of the intervening variable significantly influenced a particular financial outcome, when other predictors were controlled.

Pearson correlations between the pretest-FLEP financial outcome scales and each of the intervening variables were also needed because the value of these Pearson correlation coefficients indicated whether multicollinearity existed between the intervening factor and the pre-FLEP outcome. Since none of the baseline correlation coefficients exceeded .80, using the intervening

variables as predictors in a multivariate regression together with baseline financial measures would not pose a multicollinearity problem. This means that using these intervening variables as predictors in the outcome regressions would not be measuring the same thing as the pretest levels of the financial outcomes.

6 Results of Qualitative Analysis

The purpose of the qualitative analysis was to answer the second of the main research questions: **What were the perceptions of the students and parents about the financial outcomes the financial literacy education program had achieved?**

The results of the analysis would provide a better understanding of particular outcomes from the point of view of the students and parents. It would offer insights into how students understood the concepts, why they were deciding to change the way they save and spend, and what benefits they see at present and in the future for improving their financial behavior. It did clarify and complement the quantitative findings. It also revealed aspects of the FLEP and the students' peculiar financial realities that were not covered by the outcome (quantitative) survey.

The qualitative data were obtained from two sources. One source consisted of responses to open-ended questions in the post-Math Fair Student Survey. The other source was the parent survey timed a month after the FLEP. Students reported the learning outcomes they derived from the FLEP in their own words. Parents listed what they observed were the outcomes the FLEP had on their children.

6.1 Students' Descriptions of their FLEP Outcomes

The post-Math Fair Student Survey contained three open-ended questions that allowed students to respond in list-like statements and phrases. A modified content analysis was used to analyze each group of responses per question.

6.1.1 Student Description of Things Learned from the Math Fair

There were 258 students who completed a post-Math Fair survey that allowed them to express their learning outcomes in their own words. They were asked to: **List the top three things you learned at the Math Fair.** Student respondents listed their learning outcomes that reflected the

connection between the two modules: Career Investigation and the Math Fair. In Career Investigation, the students researched a career of their choice, the skills and aptitude it required, job descriptions, educational preparation and starting pay. Coming into the Math Fair, the students used the starting salary of the career they chose as the monthly net income from which they had to decide how to allocate basic household expenditures, savings and luxuries. As a budgeting simulation, the requirement was to end with a positive balance.

Respondent numbers were assigned to each survey. Most of the responses to open-ended questions consisted of list-like enumerations of single words, short phrases or sentences, a total of 695 of them. Using a word-based approach—as opposed to code-based—to content analysis, the responses were first listed *verbatim* in a database along with the respondent number from where they were taken. Rankings given by the students to each response were disregarded. In effect, each of the outcome statements they listed was pooled in the database without markings of its student-assigned ranks.

Instead of the unitizing phase—splitting statements with compounded ideas into single-idea statements—the following was done. 1) If the statement contains two independent ideas, it was initially pooled in an intersection category. For example, some students wrote "save more and spend less." 2) If a statement contained a phrase that was an antecedent condition to the main category, an arrow was put pointing away from the antecedent phrase. For example, "I will start saving money ← because now I know how." 3) If the phrase was a consequence or a future condition brought about by the main financial category, an arrow was put pointing to the consequence or future condition. For example, "I learned that you need to budget your money → so you won't be broke."

The limitation of this list-type of response was the loss of context. However, among the statements, were complex ones that showed the logic in which respondents related one financial aspect to another. For example, while many wrote that "having a good paying job is important" one

student explained that “you need a good job to survive in the real world.” Another one wrote, “In order to get a good job, you need good education.” A third student wrote, “What things you can buy depend on the job.”

In another example, a large number of students said that they learned “how to save money” and that “saving money is important.” One student explained why saving money is important. He wrote, “Sometimes you have problems that cost you money, so you want to have money saved for stuff like that.”

After data cleaning, stemming and reduction, the remaining statements were sorted into an initial “mega” content analysis matrix. The columns were the main themes based on the study’s logical framework expected outcomes: financial knowledge, financial attitudes (belief and self-efficacy) and financial behaviors. The rows contained the initial group of financial categories consisting of the financial aspects/topics measured quantitatively through the outcome survey. The initial categories included the following: saving, spending, budgeting/managing money, earning, budgeting, and tracking of money, needs and wants, loans. The purpose of using these categories was to attempt to link the students’ view of their learning outcomes to the quantitative survey content.

However, after a certain trend made it apparent that the concept of “needs and wants” was almost always associated with “spending wisely,” it was subsumed into the category “spending wisely.” As two students articulated “spending your money wisely means needs before wants.” Similarly, students closely associated “cost of living” and “tracking of money” with “budgeting.” So these initial categories were put under “budgeting.” Earning emerged as a category from content analysis. The final matrix had four major financial categories: earning, saving, spending, and budgeting. The Content Analytic Summary in Table 6.1 contains the results of the sorting process for the main categories, earning and saving; and in Table 6.2 the main categories, saving and budgeting.

Table 6.1

Content-Analytic Summary Table: The Student-Derived Learning Outcomes for Earning and Spending from the Financial Literacy Education Program

Main Financial *Categories*: *n* (% of students)	*Themes:* Learning Outcomes		
	Financial knowledge and skills	Financial Attitudes	Financial Behavior Strategies
Earning 59 (23%)	• That money doesn't grow on trees • About getting a job • What income is • How much you make • Taxes take away a lot of money • What things you can buy ← depend on the job • In order to get a good job ←you need good education	*Financial belief* • You need a good PAYING job → to survive in the real world • It may be good to get an extra job • It is important to get a good education *Self-efficacy* • It's hard to have a job and to earn money • I will be able to afford the things I need and → not be in debt	• Pick a stable job that makes good enough money • You may have to get a second job. • Go to college
Spending 167 (66%) Needs and wants	• How to spend my money wisely; needs before wants • Difference between wants and needs • What is important to buy and what is not • Spending money should be based around necessities rather than luxury • How to not go over • How to resist temptations from people who try to make me buy things	*Financial belief* • You need to buy first what you need and is important before the luxuries • "It's not good to spend on stuff you don't need" • You don't need fancy stuff → to make a good living • Bigger isn't always better *Self-efficacy (weak)* • How hard it is spending your own money • Money is spent way too easily. It is hard not to spend money and not to get things I want • I am easily talked into things • When you have total access, money can go very fast	• Prioritize my spending; buy the necessities first before wants • Get plans so you don't have to pay money all at once • Ask for extra details [before deciding to buy] • Spend less for the biggest, the best and most expensive items • Not to spend under pressure. Say no when you need to; don't be intimidated • Not to overspend • Having roommates to share costs is a good strategy

Table 6.2

Content-Analytic Summary Table: The Student-Derived Learning Outcomes for Saving and Budgeting from the Financial Literacy Education Program

Main Financial *Categories*: *n* (% of students)	*Themes:* Learning Outcomes		
	Financial Knowledge and Skills	Financial Attitudes	Financial Behavior Strategies
Saving 118 (47%)	• How to save money • How much money to put away • How much to put into savings monthly • How to have to save money in the bank • I realized how savings added up over time • How to make sure I have a positive bank account	*Financial belief* • Saving money is important • To save money regularly is good • I learned that I should start saving money now! • Saving dollars → can really help you • You should have money saved for times that "you have problems that cost you money." • Saving money in an account is a good idea *Self-efficacy* • How hard it is to save money	• Save lots of money • Put money away as much money as possible in savings • Save first before buying • Have a savings account • Save extra money in the bank
Budgeting 93 (37%) Cost of living Tracking of money	• How to come up with a plan • How to budget to make my income last • How to live off a budget • How to adjust your life to how much money you have • How to manage finances by making choices about [what] I do and don't need • How to ignore stuff you can't afford • How to regulate my expenses and to live within my means • With so many choices to make, "how to choose the right financial choice" • What you need to survive • "Life costs a lot of money." • There are a lot of things that need to be paid • About bills and how to handle bills	*Financial belief* • The need to make a plan for your dollars (a budget) → so you won't be broke • You have to live with the money you earn→ Debt is not something you want to live with • Living within your means is a valuable skill • You need to watch how much you spend • Decisions can change your life • It's important to put your priorities in order. "Bills and rent come first, then food and utilities, then entertainment like cable TV, internet, video game" *Self-efficacy* • It is very possible to live within your means • It's difficult to pay bills and spend money on things you need and have extra money left over	• Think ahead • Make a budget • Know how much the essentials cost so you can plan • Live within your means • Be realistic on what you're going to need • Buy what you can • Don't spend what you don't have • Not to buy anything unless you know you have the money • Keep track of money and of what you spend • Always check how much money you've spent two times or more • Don't buy stuff you don't need on a tight budget • Pay your bills first, then buy necessities, then buy wants

6.1.2 Students' Responses for Changing or Not Changing the Way They Save

In this subsection, student open-ended responses to the following question posed in the Post-Math Fair Survey are presented:

- **Will the Math Fair change the way you save money? Yes or No**
  - **If yes, please describe.**
  - **If no, please explain.**

There were 258 students who responded to this question. Around 76% of these respondents answered "yes" they will change the way they save money. This was just their intent to change. Only about three students mentioned that they have actually changed the way they save money. The 24% who answered "no" gave reasons that could be of two types. One type of reason that came from 16% of total respondents who answered "No" indicated that they have no reason to change because they are already saving, or have a bank account, or are satisfied with the way they were saving money. The other type of reason came from students who might lack access to money like the one who said, "I don't make a lot money. So I don't really save it." Another student admitted that saving money is not possible "because "I don't get money."

Compared to one month after the FLEP, 29% of the 245 outcome survey respondents, as seen in Table 5.12, reported that they actually began to save, or had increased the proportion of money that they save. Recall however, that the instrument was limited in its ability to measure small changes so it might have underestimated the actual change in savings behavior. Nevertheless, there was a significant rise in savings behavior a month after the FELP based on the higher level for the posttest than the pretest.

The descriptions of the students who were intending to change the way they save varied in content. Some students described how they plan to change the way they save. Others gave the motivation and reason why they intended to change. These statements were antecedents to the students' plan to change the way they save. A few of the students wrote their expected positive

consequences for improving their savings behavior or a negative one, if they don't. And others mentioned their savings goals that gave them the incentive to change their savings behavior.

The students' descriptions (statements) were fitted into a content analytic matrix that contained the following columns: "Antecedent to Change," "Changes in Ways to Save" and "Consequences of Change." The statements in each column were grouped by different categories. Statements in "Antecedent to Change" were grouped according to the financial outcomes: financial knowledge & skills and financial attitudes (belief and self-efficacy). As they emerged from the analysis, the categories "Awareness of Financial Reality" and "Parent Appreciation" were added in "Antecedent to Change" column. Statements under "Changes in Ways to Save" were given categories based on the common saving strategies mentioned by the students. These categories are "Save more spend less," "Not Spending" and "Tools to help save more." The statements under "Consequences of Change" have two categories, "Financial conditions" and "Financial goals." The summary of descriptions provided by student who intended to change the way they save is shown in Table 6.3.

Table 6.3

Content-Analytic Summary Table: Students Intention to Change the Way They Will Save Money after the Math Fair

Antecedent to Change	Changes in the Ways to Save	Consequences of Change
Enhanced Knowledge and Skills Now I know • How to save money • What to save on • How much to put in savings • How to manage my money carefully • How to spend the right way so I can save money Awareness in Financial Reality • What is needed in life and what isn't • There is a lot of things I am going to have to buy. • How much things cost • Unexpected events and emergencies can happen [that cost money] • "After seeing that it was hard to get everything needed with just my monthly pay [and pay all the bills] I need more money after for extra things" More Positive Financial Belief • You need money for everything so it's important to save • You need money and need to know what to do with it • That if you have a good opportunity to save you should • The more [you] make the more you should save just because you make a lot doesn't mean spend a lot Save by spending wisely • "I need to save my money and not spend it on things I don't need" Better Financial Self-efficacy • I'm smarter with money • I will be more frugal with my money • I will be more conservative with my money from now on	Strategies to Saving • Begin saving money • I will save more of my money than I really do save • Save regularly • I will open up a bank account • I will deposit money in my savings account. It's harder to be stolen and I will get interest • Set aside a specific proportion of your income regularly Save more spend less • I will spend less money on things I want, on luxuries and fancy stuff and expensive things • I will bring less money to the mall when I go • Set aside money first before spending • Resist impulse purchases • Save instead of spending • I will try to do a better job saving for a goal instead of making impulse buys Not to spend • Not to buy now, save for later • Not to spend on things I don't need Tools to help save more • I had to shift my budget to get things • I will keep track of my money and save more	Financial Conditions • Avoid debt • So you don't go bankrupt • If I save money, my life is better • The more money you save, the better life will be for you later • Have a cushion or back-up in case of shortage of money • To have extra money • Money available for emergencies or in case something unexpected happens Financial Goals • To get whatever I want • To pay for bills • For important things like health insurance • For college Future needs
Parent appreciation • Their hard work to earn money for family's needs • Realized all parents had to pay • I understand why parents can't buy me stuff		

6.1.3 Students' Responses for Changing or Not Changing the Way They Spend

In this subsection, open-ended responses of the student to the following question posed in the Post-Math Fair Survey are presented:

- **Will the Math Fair change the way you spend money?**
  - **If yes, please describe.**
  - **If no, please explain.**

Students reported their intent to change the way they spend by answering "Yes". Around 81% of total 258 respondent-participants in the Math Fair posted their intention to change the way they spend. Although 19% of the students indicated that they will not change, 9% of the students here explained that they already are spending wisely or saving all their money or not spending much. Compared to one month after the FLEP, 44% of the 245 outcome survey respondents, as seen in Table 5.10, reported that they actually changed the way they spent, by comparing prices, reduction in impulse buying and/or waiting for sales.

Note that the students' open-ended list responses were force-fitted in cells of a matrix with the themes (Antecedent to Change, Changed Spending Behavior Strategy, and Consequence to Change) in columns and initially, categories of spending strategies in rows. The sub-categories that were eventually used in the Antecedent to Change column included "Awareness of financial reality," "Enhanced financial knowledge and skills," "More positive financial attitudes" and "Financial self-efficacy;" and "Appreciation of parents."

The category "Awareness of Financial Reality" emerged for statements like this: "I now know how expensive everything is and you don't need the fanciest car or phone, and it's better to just buy the cheaper ones." This meant that participation in the Math Fair increased the awareness of the cost of living and improved the attitude towards "fanciest" items that he/she would instead "buy the cheaper ones."

More broadly, “spending wisely” was mainly described in this knowledge context: “It all depends on the “wants” and “needs.” One of the categories under “Changes in Ways to Spend Wisely” is “Strategies to Spend Wisely.” Here, students’ intended spending strategies were defined in line with their conception of needs and wants. For example, to “spend more on needs,” “spend money on the things I need first then fun things,” or simply “buy what’s important and useful to me.” Some of the students used negations such as “[I] don’t want to waste money on the things that aren’t needed.”

The actual goal to spending wisely and spending less was to be able to accumulate more savings for “wants,” more important future purchases like a car, future needs and money in case of emergencies. Some students pointed out that if they do not spend wisely, the unwanted consequence would be debt and that, “debt is something you don’t want to live with.” The content analytic summary is shown in Table 6.4.

The students expressed a broader meaning both in its notion and practical sense to the term “spending wisely.” They went beyond the aspects that were quantitatively measured in the outcome survey. Recall that in the quantitative survey, the “spending wisely” subscale consisted of “compare prices,” “impulse-buying” and “wait for sales.” As seen in Table 6.4, however, the students, in their descriptions and reasons, did not use the same terms in describing what “spending wisely” meant to them.

The closest notions to “compare prices” that the students wrote about were “I will buy cheaper stuff” and “I will get the best quality for the cheapest.”

In the aspect of “wait for sales” there was only one student who wrote explicitly about this. The student wrote: “I will look for sales on things and the best deals to save money.”

Table 6.4

Content-Analytic Summary Table: Students Intention to Change the Way They Will Spend Money after the Math Fair

Antecedent to Change	Changes in Ways to Spend Wisely	Consequences of Change
Enhanced Knowledge and Skills Now I know • [Spending wisely] all depends on the "wants" and "needs" • What things are important to spend money on and things I shouldn't spend on • How to spend my money • How to wait to spend money • To think of what I really need and what I just want • Priority of getting the things you need before the things you want Awareness of Financial Reality • How much things actually cost • When I grow up I should not get anything I want until I pay the bills and other stuff More positive financial belief • One must use money wisely • I need to be more careful and watch what I spend my money on • I should save money more than I spend it • I don't want to waste money on the things that aren't needed • I don't need the fanciest car or phone, and it's better to just buy the cheaper ones. Financial Self-efficacy Improved • Now I'll spend smart meaning I'm going to buy things I need • I'll be more conservative with money • I will spend more responsibly Still weak • It is easy to spend all of my money • Now I want just to spend money right away	Strategies to Spend Wisely • Spend first on needs, what is important and useful; if I have cash left over, then I get things I want • Not to spend too much than you need to • Will spend wisely because I'm not going to be able to afford everything • I will look for sales on things and the best deals to save money, as long as it doesn't sacrifice too much quality • Not to spend now, instead to save for future goals Think before buying • I will think twice before I indulge in something I want • I will check out all of my options before buying now • I'm going to make better choices to save me money • I will think ahead before spending • Resist temptations of sales personnel • Not to spend all of my money all at once Spend less on luxuries and wants • Don't waste money on things you don't need and will never use • I spend much less now Use of tools for spending wisely Budget • I spend within a limited budget • I will not spend more than I saved • I won't spend my money unless I think I have to, or if I can budget the money Tracking of money • I will keep in mind how much I'm spending without overspending.	Financial conditions • Won't put me in debt • So you will have enough money for the things you need • So I can pay bills for cars, house, schools • I need money saved for when I become sick, and my house burn I have to save money. It is important For financial goals • I use to save money for things I wanted, but now I put more money in my bank → for a CAR [goal change] • I'm gonna need to buy things for my house
Parent appreciation • I now know how hard it is for my parents	Parent relations • I don't ask for things from my parents, because I understand	

The term “impulse-buying” was rarely used by the students either. In meaning, the closest expressions were found among the reasons given by students who did not intend to change the way they spend. One of these student’s reasons for not changing the way he/she spent money was “because I want to buy whatever I want.” Another student wrote: “I like to buy the things I want if I have the money.” Thus, the opposite positive behavior had to do with spending money on needs first before wants. As one student wrote: “I will take care of things I need, then get things I want if I have cash left over.“ Other students said they would only buy what they need and was useful to them, as one of them articulated: “I’ll only buy things I need instead of buying everything I want.” Forty-five students wrote about changing their spending behavior in relation to giving priority to buying necessities, what is important and useful over wants, luxuries and extra things.

Students did not treat “Spending wisely” as a financial behavior in isolation but in view of finding opportunities to save more money. Keeping money was for a more important financial goal or “to have a cushion in cases of unexpected events that cost money.” Students mentioned strategies that could aid them to both save responsibly and spend wisely. For example, creating a budget and sticking to it are helpful strategies to “conserve money.” Another tool they learned was to track their money, particularly expenses so they don’t overspend. For the students, the worst scenario for spending more than their income was to be in debt or to go bankrupt. They would rather look after their general well-being, “to have a better life” in the future by having “money stashed away.” As a goal, the money they do not spend or do not spend on the fanciest thing can be saved.

6.2 Parents’ Responses: What They Say Their Child Learned

Although the individual parents’ survey could not be linked directly to their children’s survey, the parent responses conveyed what they had observed was the impact that FLEP had on their children. The analysis of the parent’s open-ended responses would answer the research question:

What were the perceptions of the students' parents about the financial outcomes that the financial literacy education program achieved?

The parents' statements were utilized to verify the students' self-reported outcomes. It would establish if parent observations about changes in financial outcomes in their children coincided with the students' self-reported outcomes after participating in the FLEP.

A parent survey was sent home a month after the Math Fair. This section presents parents' free text responses to two open-ended questions:

- **After the Math Fair, please list the top three financial matters that your child began to understand.**
- **What changes have you observed in your child's financial behavior?**

There were 47 parents whose responses were used in the analysis. Each survey was numbered. A total of 116 list-like responses were generated for the first question to list the top financial matters their children began to understand. Parents of students in Three Module who participated in the Checkbook Project had an additional 17 responses. These responses were listed *verbatim* in a database alongside the respondent number. Then these were unitized into statements with single ideas. Using content analysis, the unitized statements were listed by main categories along with the frequency parents listed them.

After the reduction step, the statements were fitted into cells of a matrix with Financial Knowledge and Financial Attitudes in columns and the Main Financial Categories (earning, saving, spending and budgeting) in rows. As was done in the student accounts, "needs and wants" were subsumed under "spending." Similarly, "cost of living" and 'tracking of money" went under "budgeting." Counts for each financial category pertained only to one parent responder, so that if a parent listed aspects of saving more than once, it was only counted once.

In response to the second question, parents listed what they observed were changes in their children's financial behavior. These consisted of 48 text responses in the form of individual words,

phrases and sentences. These were fitted into cells of the same matrix but under the Financial Behavior columns and the appropriate Main Financial Category.

The summary of the content analysis of parents' open-ended responses is shown in Table 6.5. The four main financial aspects commented on based on the proportion of parents listing them were about saving money (77% of parents), spending the right way (51%), budgeting (40%) and earning (26%). In fact, 45 of 47 parents mentioned increase in understanding of certain financial matters, concepts and their relationships. The category "earning" included its direct relation to having a good education. Although parents' observations could not be linked directly to their children's responses in the outcome survey and the post-Math Fair student survey, parents' responses confirmed the learning outcomes that the students reported in their own open-end responses.

In general, parents attested that participation in the FLEP increased their children's knowledge, improved attitudes and in what ways it changed some of their financial behavior. This could be considered a strong evidence of the FLEP's effectiveness, as verified by a third party who closely knows the students. Future research could use the information in open-end responses to design a survey that could be easily answered by parents and so encourage them to provide feedback on the effects of the FLEP. Feedback would be useful in improving the program, designing programs for other grade levels, and also could be considered in developing a course for parents.

Parents of students in Three Module who participated in the Budget and Checkbook Project posted that their children learned to balance a checkbook. Their children also learned about loans, interest and debt management as well as practical knowledge needed in the "process of acquiring a car loan." One parent commented that it "made her more aware of financial responsibilities.**"** One parent revealed that she consented to assist his/her child in opening a checking account while admitting that he/she was "totally against it several months ago."

Table 6.5

Content-Analytic Summary Table: The Parent-Observed Learning Outcomes and Behavioral Changes of their Children after the Financial Literacy Education Program

Main Financial Categories: *n* (% of parents)	Themes: Changes in Financial Outcomes		
	Financial Understanding	Financial Attitudes	Financial Behavior
Earning 12 (26%)	Increased in knowledge 12 (26%) • Relationship of education, jobs and earnings (5) • How money is generated, not "just handed" out • Jobs and pay	Acquired better attitude 6 (13%) • Importance of education as it relates to jobs and earning potential (5) • The need for a good job to earn enough money	Behavior 3 (6%) • Generated more discussions about careers and its link to schooling and future goals. • Increased odd job hours to earn money for wants.
Saving 36 (77%)	Gained in knowledge 18 (38%) • Concept of saving and ways to save money (18) • Savings accounts and the concept of interest (2) • Setting financial goals (3) – wants, travel, car, college • Link of saving to curbing of mindless spending	Improved savings attitude 14-(30%) Deepened belief in • Importance and need to save money • Saving money for the future • Spending less boosts savings Strengthened self-efficacy • Able to save for a specific goal • Can hold on to money to pay bills on time	Got better at saving money 22-(47%) • Started small savings (3) • Saves her money a lot more-(4) • saves his money in a bank account • accomplishes saving goals (5) • Saves rather than spends • From savings, pays bills ahead of time
Spending 24 (51%)	Expanded in knowledge as regards spending wisely 18 (38%) • How to spend money the right way • What to spend money on: buying the needs not wants • Difference between a need and a want (3) • How to find sales	Had more positive attitude 8 (17%) Had more positive belief • The need to spend wisely • Buying the newest, latest and best isn't as important • "Must haves" became "wants" Improved in self-efficacy • "more cost conscious" • "being frugal" • More careful with spending • Able to resist impulse-buys	Changed in spending behavior 12 (26%) • spends money wisely • Thinks more before spending on stuff that isn't important • Shops for lower-priced items • Spending less money on "wants", more on "needs"
Budget and budgeting 19 (40%) Cost of living 7 (15%)	Expanded knowledge and skills 25 (53%) • How to make and stick to a budget • "What it takes to run a household budget and make ends meet." • Actual cost of living • About expenses, bills and payments • What had to be paid for and how much it costs • Keeping track of money and expenses	Shifted to more positive belief 8 (17%) • Importance of budgeting money • The need to stay on budget • Importance of saving and spending wisely → so you can afford to live and maintain a good life • Paying bills on-time is important • Importance of fiscal and financial responsibility	Improved behavior 3 (6%) • Considers spending for an item if it fits the household budget. • Pays bills ahead of time • Monitors spending

Saving money, although not explicitly conceived so by the students, is actual asset building. A student is starting in the right direction when he wrote: “Even though I don’t save money but it helped me change my mind on how I was going to save money.” Another said: “I use to never save money, now I am saving more.” Participation in FLEP likely enhanced the financial formation transmitted from their homes, gave a glimpse of financial and fiscal responsibility and its relevance to life, survival and a better future. One of the parents expressed appreciation for this with her remark: “it’s good to know there is reinforcement of financial responsibility in school.” Another parent wrote that the FLEP “taught him a lot about what you have to do to maintain a good life.”

In terms of spending, students might not be waiting for sales (only one mentioned it) perhaps because they still depend on an adult to bring them to the mall. But parents had observed that their children can “resist an impulse purchase” or “think if there’s a need to buy things they want.” As students have either become more “cost-conscious” or gotten into the habit of gauging if a thing is useful or not, “spending on just anything you want” was now considered to be a waste of money. “Must have” became “wants,” wrote one parent. Parents noted that much of the students’ understanding about the distinction between “needs and wants” was applied as criteria for “spending carefully” and “being smart with money.”

Parents seemed to be satisfied with certain results of the FLEP. For instance, on parent wrote, “The program broke the process down, so she was able to accomplish her saving goals.” Another parent wrote, “She’s more conservative about what things cost and [whether] it fit in our budget (monthly).”

While 13 (28%) of 47 parents detected no changes in their children’s financial behaviors, 11 of them listed in which financial matters their children showed increased awareness, enhanced knowledge and skill and developed more positive attitudes. As one of the parents stated, “Importance of saving for the future is understood, but the execution is lacking.” Some of the

parents' optimism was reflected in remarks like "haven't noticed yet." Such comments seemed to imply that in time their children will eventually manifest positive behavioral changes. It would take time before behaviors change even after raising their awareness, increasing their knowledge and improving their attitude relative to money's importance. This could explain why there were more students who improved in financial knowledge and attitude, but less in behavioral changes a month after the FLEP.

However, four of the parents did not think their children would have observable changes in financial behaviors because they believe that their children were "already good with money" and "already a good saver." Another parent did not expect any behavior change because his/her child "doesn't have much [money], just birthdays and an occasional job/chore." Lacking financial capital, student learning in personal finance is constrained, if not rendered useless.

Two of 47 parents claimed that they have not detected any change in their children's financial understanding and behavior. One of them asserted that the FLEP was not applicable for the children's age or is "not a life-changing experience." The parent reasoned that "a middle school child has no income" and that while "it's a good program" ... "It will become more valuable over time" when [the child] is older and has actual income and expenses to manage."

Six of the parents wrote that the FLEP experience "prompted several good conversations" about financial matters, cost of living, household budgets and the relation of a good education to a good paying job. For example, one parent noted that that they had "more conversations about career; more connection between current schooling and future goals." These child-parent discussion about personal finance matters could explain the influence of parents in the students' financial competence, most likely increasing post-FLEP outcome levels directly or by interacting with other FLEP and non-FLEP factors.

Furthermore, based on parent comments, students demonstrated comprehension of interrelated financial concepts in their lives and context, as well as the consequences of their financial decisions and actions. One of the parents stated, “She learned that money doesn’t grow on trees and that everyday expenses add up and she needs to stay on budget and pay for necessities before pleasure.” Another feedback was, “I think the project helps with life skills, spending habits, helps them recognize the importance in saving and spending wisely so you can afford to live.” Recognizing that FLEP was a good beginning, one of the parents wrote, “I think it [the FLEP] broadened his horizons; however, more education is needed also.” Here was a call for continuing education in personal finance.

In conclusion, this chapter showed that the FLEP was found effective in a variety of ways by more than 85% of students and parents alike. A few of the students who thought the FLEP was not effective claimed that they are already satisfied with their level of financial literacy and behavior and sense of financial responsibility. One student wrote: “I think I save money pretty well and am not a big spender even before the Math Fair.” But there remained a low number of students (and parents) who think they are still young for the financial realities that were simulated in the FLEP which for them lacked relevance and not enough to foster an improvement in their financial behavior.

One of the outcomes missed in the quantitative measures was in the area of *earning* and its link to having a good education. This became apparent in the statements elicited by students and parents alike. This outcome also could have positive tangible and immediate effects on attitude and behaviors of students towards their own education and efforts to study. As one of the teachers had hoped: “I just want them to have … a goal before they get to high school.” … [They should] … “Make sure they stay focused when they are in high school. Grades matter in terms of where they want to go to college or if they want to get a job right after high school.”

The aspects contained in the financial behavioral scale (spending wisely, use of budgets, tracking of money and saving-spending ratio) were very specific to allow any reliable quantification of each subscale. The results of the content analysis of the students' open-ended responses regarding financial behavior show that they linked one financial behavior to another. For example, the motivation in spending wisely is to save more money. To avoid overspending, one needs a budget and stick to it by tracking expenses. Thus, constructing the concept of financial behavior as a multidimensional scale is justified.

The conceptual connections provided by both the students' logic and their parents' responses gave some credence to this study's conceptual framework relating the influence of FLEP to an increase in knowledge; then knowledge to improvement in attitudes; then finally attitudes to changes in behavior. For example, students would now "start saving" or "save more" because they "now know how to save" and realized the importance of saving to reach some financial goal, supply future needs, and provide a "cushion" for money shortage and unexpected events. So, increase in theoretical and practical knowledge seemed to lead to a change in savings behavior; and so did a change in financial attitude lead to a change in financial behavior. However, it is still unclear what the direction and sequence of relationship is among financial knowledge, belief and self-efficacy and behavior. Which financial outcome is a predictor of another financial outcome? Furthermore, intervening factors such as parental influence seemed to be affecting financial outcomes as did the possession of money. The series of multiple regressions that is shown in Section 7.3.1, would determine the main effects of antecedent financial outcome levels and intervening factors on individual post-FLEP financial outcomes, within the context of participation in the FLEP.

7 FINDINGS

In this chapter, data and results presented in the previous chapter were built on to further elucidate the answers to the research questions.

In Chapter 5, dependent *t*-tests results demonstrated that there were significant improvements in subjective financial knowledge, belief, self-efficacy and behaviors a month after the FLEP. The tests were done for the mean differences between the post- and pretest levels of each financial outcome scale and their component items. Significant improvements were seen for the entire eighth grade respondents (Section 5.1) and separately by FLEP groups (Section 5.3). Only in savings behavior from specific income sources, specifically plain allowance was there not a statistically significant positive change.

However, uncertainty about the randomness of participant assignment to the different FLEP groups and the lack of a control group, made the results of the dependent *t*-tests inconclusive. Was the change really produced by participation in the FLEP? Qualitative analysis of student and parent open-ended responses did confirm the positive effects of FLEP. If that was so, how much of the change could be attributed to the FLEP? Without random assignment of a large number of students per group, the individual differences among students were not likely evened-out across FLEP groups from the start. In a sense, individual differences would have cancelled out with random assignment to FLEP groups. In research terms, if groups were probabilistically equivalent and the only difference was the amount of FLEP they received, then it would be highly probable that the changes in outcomes were from FLEP participation in a specific set of modules. But if the equivalence of the groups were uncertain, there could be other plausible explanations for the positive changes in outcomes. Without a control or comparison group, one would not know how the financial outcomes of the students taking the FLEP would have changed over the same period of time even without the course.

Section 7.1 examines the association between FLEP participation and the financial outcomes. With the equivalence of the FLEP groups in question, there was a need to test whether or not the extent of FLEP participation (FLEP participation score) was associated with the changes in financial knowledge, belief, self-efficacy and behavior. Although an association between variables does not necessarily mean causation, it nevertheless gives an initial gauge of significant relationships that can be further examined. Thus, with data from the entire respondent population and each of the FLEP groups, two sets of Pearson correlations were run for the following purpose:

- To determine if there was an association between FLEP participation scores and the changes in financial outcomes (posttest minus pretest levels). In addition, conducting the Pearson correlations also answered the research question**: What are the relationships among the changes in subjective financial knowledge levels to changes in financial attitudinal indicators and changes in financial behaviors?**
- To determine if there was a relationship between the FLEP Participation score to the financial quiz scores and the financial outcomes' posttest levels. This statistical test also determined if the posttest levels among the financial outcomes were correlated to each other.

Section 7.2 compares the financial outcome measures between one and another FLEP group. The absence of a control group limited the analysis to a comparison of the relative effectiveness of the three treatment groups. Before proceeding to compare the differences in group effects, the baseline levels had to be considered. At this point, it was still assumed that FLEP participation produced the positive changes in financial outcomes. It could not be ascertained, however, that before the FLEP started, the students were randomly selected and randomly assigned to each of the FLEP groups. Hence, to get a sense if the FLEP groups started off at the same financial outcome levels

before the start of the FLEP, a one-way ANOVA was conducted on the baseline levels in financial knowledge, belief, self-efficacy and behavior.

The next statistical test carried out was to determine if one group's FLEP exposure was more effective than another group's. This was demonstrated by conducting the appropriate statistical tests that detected whether or not there were significant differences in financial outcome after the FLEP between the groups. The results would provide an answer to the sub-question: **Was there a significant difference in financial outcomes' posttest levels between the group that participated in three modules and the other groups that took two modules?** Based on the available data, the appropriate statistical tests were conducted with the following aims:

- To determine if financial quiz scores were significantly different or not between the FLEP groups, a one way analysis of variance was conducted. An ANOVA is appropriate for data gathered only as a posttest.
- To determine if the estimated mean differences in financial outcomes' levels after the FLEP were significant or not between FLEP groups, an analysis of covariance was conducted. An ANCOVA is appropriate where the pretest financial outcome levels were controlled to expose the part of the posttest variance attributable to the FLEP group.

Section 7.3 examines the effects of FLEP participation score, antecedent financial outcomes and intervening variables on the post-FLEP levels of financial outcomes. Given that the FLEP did not happen in isolation, other factors affecting the changes in financial outcomes were recognized. Multiple regressions for each of the FLEP groups were conducted to determine the factors that significantly explain the changes in the following financial outcomes: financial quiz, subjective financial knowledge, belief, self-efficacy and behaviors. The factors tested as predictors of said financial outcomes included their relevant antecedent financial outcomes, FLEP participation score (independent variable), and the intervening variables. The resulting regression models would be used

to answer the main research question: **To what extent did the financial literacy education program bring about changes in financial knowledge, attitude and behaviors?**

Finally, the predictors of the regression model were regarded in this study as the key determinants in building financial capability among the middle schoolers who participated in this New England school-based FLEP.

7.1 Correlations between FLEP participation scores and the financial outcomes

The purpose of this section was to determine whether or not participation in the FLEP (independent variable) was associated to the following forms of financial outcomes (dependent variables: 1) change in financial outcomes; and 2) post-FLEP financial outcome levels.

The conceptual framework in the current study envisioned the FLEP to increase financial awareness, knowledge and skills. In turn, increase in financial knowledge would help students form more positive financial beliefs and enhance financial self-efficacy. Subsequently, equipped with improved financial attitudes, more welfare-enhancing financial behaviors would be adopted.

Hence, there was an expectation that participation in the FLEP would produce improvements in financial outcomes. So, it was hypothesized that there would be positive associations between FLEP scores and change in financial outcomes before and after the FLEP. Similarly, there would be positive relationships between FLEP scores and post-FLEP financial outcomes.

7.1.1 Correlation between FLEP participation and changes in financial outcomes

For the purpose of examining if there existed significant correlations between the independent variable (FLEP participation score) and the changes in the dependent variables (financial outcome scales), bivariate Pearson correlations were conducted. Changes in financial outcomes were the mean differences between the summated posttest and pretest levels that the student posted for

each financial outcome scale in knowledge, belief, self-efficacy and behavior. It was expected that the higher the FLEP participation score, the greater the change in financial outcomes.

In addition, conducting the Pearson correlations also would answer the research question**:** **What are the relationships among the changes in subjective financial knowledge levels with changes in financial attitudinal indicators and changes in financial behaviors?** Based on the conceptual framework of this study, it was expected that an increase in financial knowledge would lead to a more positive financial belief, which in turn would lead to an enhancement in self-efficacy; and in turn, lead to an improvement in behavior. Two Pearson correlations were run: one, using data from the entire respondent population; and the other separately for each of the FLEP groups. The results of Pearson correlations between the FLEP scores and the change in each of the financial outcomes for the entire respondent population are shown in Table 7.1.

Table 7.1

Pearson Correlations Coefficients between FLEP Participation Score and Change in Financial Outcome Scales for All FLEP Groups

Change in Financial Outcome Scales (#1 - 4)	M	SD	Pearson Correlation Coefficients				
			FLE score	1	2	3	4
FLE participation score	20.26	6.03		.148*	.014	-.058	.004
1. Financial knowledge	4.02	3.16	(245)		.435***	.342***	.237***
2. Financial belief	2.93	3.37	(243)	(243)		.620***	.345***
3. Financial self-efficacy	2.97	3.51	(243)	(243)	(242)		.534***
4. Financial behavior	2.55	3.77	(244)	(244)	(242)	(242)	

Note: Numbers of cases are in parenthesis below the diagonal and Pearson correlation coefficients are above it.
*$p < .05$. *** $p < .001$

As seen in the Table 7.1, the only statistically significant and positive correlation involved FLEP participation score with the change in subjective financial knowledge, $r(243) = .148$, $p = .02$; and the strength of the correlation was weak. However, FLEP participation score's correlations with changes in financial beliefs, self-efficacy and behaviors were almost all flat and not significant.

The lack of correlation between FLEP participation score and change in financial outcomes for financial belief, self-efficacy and behaviors did not necessarily mean that the FLEP participation had no effect on these financial outcomes. But it was not expected after finding that improvements in financial belief, self-efficacy and behaviors were significant using *t*-tests. Further, student testimonies and parent confirmation of student learning and behavioral change provided evidence about improvements in financial outcomes after FLEP participation. Another Pearson correlation test for the same variables was conducted for each FLEP group. This determined if the same correlations or the lack thereof also occurred in each FLEP group.

The explanation for not detecting significant correlations between FLEP participation scores and changes in financial outcomes for financial belief, self-efficacy and behavior stemmed from the inherent limitations in the survey's design. First, the subjective nature of self-assessment placed accuracy of the self-reported financial outcome levels into question. Second, the measurement of FLEP participation score for the Math Fair reduced the sensitivity of the instrument to detect its associations with changes in financial outcomes. Third, the floor effect occurred because large percentages of students reported that they had no change in these financial outcomes: 29% for financial belief, 30% self-efficacy and 42% behavior.

Since Pearson product-moment correlation is a measure of the strength of a linear relationship between two variables, a significant correlation will only occur depending on how close the data points are to the line of best fit. The closer the data points are to the linear model, the higher the coefficient, and the stronger the relationship between the two variables. However, the previously mentioned limitation of the instrument reduced the variability of the variables that lessened the chances of finding a linear relationship between them. However, floor effects across a broad range of FLEP scores would drag the linear model towards a horizontal position, which is interpreted as absence of correlation.

Going back to the results in Table 7.1, intercorrelations between the changes in financial outcomes were all positive and significant, although strengths of pair-wise relationships varied. Focusing first on the relationship of the change in subjective financial knowledge with change in financial beliefs, it can be noted that the strength of this correlation was moderate and significant, $r(241) = .435$, $p < .001$. The strength of the next correlation with change in financial self-efficacy decreased to moderate to weak, $r(241) = . 342$, $p < .001$; and then the correlation with change in financial behaviors reduced further in strength to weak, $r(242) = .237$, $p < .001$.

Of the remaining pairs, the correlation of the change in financial beliefs was strong with the change in financial self-efficacy, $r(240) = .620$, $p < .001$ but was moderate to weak with change in financial behaviors, $r(240) = .345$, $p < .001$. The relationship of the change in financial self-efficacy was strong to moderate with the change in financial behavior, $r(240) = .534$, $p < .001$.

Based on the conceptual framework used in the current study, financial education was expected to increase financial knowledge. In this study, that was confirmed by the significant positive although weak correlation between FLEP participation score and change in financial knowledge. The increase in financial understanding brought about by financial education appeared to effect a change in financial beliefs and an enhancement in self-efficacy. With improved self-efficacy, behaviors improved.

Students had associated an increase in their knowledge with improvement in behavior. One student stated that after learning how to save and what to save for, he/she will begin to save. A parent observed a change in attitude, describing that their child became “cost conscious” after being made aware of the actual cost of living and the needs that had to be paid for to live.

Correlations between FLEP participation scores with change in each of the financial outcomes were also examined within FLEP groups. The results of the bivariate Pearson correlations conducted within each FLEP group are shown in Table 7.2.

Table 7.2

Pearson Correlation of FLEP Participation Scores with Changes (Posttest minus Pretest) in Financial Outcome Scales for Each FLEP Group

Variables	FLEP Grouping					
	Two Module		Two+ Module		Three Module	
	M (*SD*)	*r* (*n*)	*M* (*SD*)	*r* (*n*)	*M* (*SD*)	*r* (*n*)
FLEP participation score	13.76 (1.53)	1 (54)	18.70 (1.87)	1 (125)	28.53 (4.30)	1 (66)
			Change in Financial Outcomes			
Financial knowledge	3.85 (2.67)	-.037 (54)	3.82 (3.36)	.030 (125)	4.53 (3.12)	.370** (66)
Financial belief	2.83 (3.39)	-.008 (53)	3.11 (3.48)	-.074 (125)	2.66 (3.17)	.314* (65)
Financial self-efficacy	2.85 (3.01)	.206 (54)	3.36 (3.97)	-.118 (124)	2.31 (2.85)	.193 (65)
Financial behavior	2.91 (3.66)	.124 (54)	2.57 (4.02)	.054 (125)	2.23 (3.37)	.261* (65)

Note: Standard deviations are in parenthesis below the mean. Number of cases are in parenthesis under Pearson correlation coefficient, *r*.
**$p < .01$. *** $p < .001$

The results revealed that it was only for Three Module group where the extent of FLEP exposure showed significant correlations with changes in financial knowledge [$r(65) = .37$, $p = .002$], financial beliefs [$r(64) = .31$, $p = .011$] and financial behaviors [$r(64) = .26$, $p = .036$]. The strengths of the relationships were moderate to weak for financial knowledge and belief and weak for financial behavior. In contrast, for Two Module and Two+ Modules, there were practically no correlations of FLEP scores with financial knowledge and belief. The weak correlations of FLEP scores with financial self-efficacy were not significant, but positive for Two Module, $r(52) = .206$, *n.s.* and negative for Two+ Module, $r(52) = .37$, *n.s*. A negative correlation suggested that on the average Two+ Module students with lower FLEP participation scores posted larger improvements in financial self-efficacy. A positive correlation meant that on the average, students with higher participation scores also had improved more.

In brief, none of the changes in financial outcomes for Two Module and Two+ Modules groups were significantly correlated with the extent of FLEP exposure. Again, this was not expected

considering previous statistical tests and testimonies about positive outcomes from both students and parents. Separating the correlations by groups brought into focus the main reason for the absence of correlations. For although all of the groups' variances were reduced due to the floor effect, Three Module still yielded significant correlations in most of the financial outcomes. The problem lies in the poor calibration of the instrument measuring the independent variable for Two Module and Two+ Module groups, which lacked the sensitivity to detect the linear dependence of financial outcome levels on extent of participation. It restricted the range in scores on Math Fair participation and requirements. As an illustration, a scatter plot of the change in financial belief versus FLEP participation score exhibited columns of data points (about 90% of total) huddled within the FLEP score narrow range of 12-16 for Two Module and 17-21 for Two+ Module. In contrast, the data points for Three Module were more dispersed along the FLEP score range of 15 to 35 with 74% within 26-30 range, in an upward trend.

Without some more gradient in FLEP participation scores, no linear relationships between the variables were detected for Two Module and Two+ Modules groups. The differences in the range of FLEP scores and subjectivity in the outcome measures affected the detection of correlations and strength of relationships between the outcome variables on the treatment measure.

The calibration of the instrument could have been improved by breaking down the scores for Math Fair participation and fulfillment of requirements. As it stood, module participation was 3 = Yes and 0 = No and completion of requirements was also 3 = Yes and 0 = No. The way participation in Career Investigation and the Checkbook were measured could have been followed, i.e., with 3 = all parts of it, 2 = most of it, 1 = few parts. Fulfillment of requirements could have allotted 1 point each to the following: visited all booths, completed the budget, and got a certificate. This adjustment may have improved the sensitivity of the instrument.

The results of Pearson correlations conducted between pairs of changes in financial outcomes are summarized in Table 7.3. All of the pair-wise correlations were positive and significant, except for Three Module's change in financial knowledge and behavior. This could have been due to posting the largest floor effect of 41%, by students who did not change in behavior a month after the FLEP. What these correlations in Table 7.3 indicate is that most of those who reported a change in one outcome also did so in the outcome correlated to it. For example, most of the Two Module students who increased their financial knowledge also improved their financial belief, $r(52) = .56$, $p < .001$; the strength of this correlation was moderate. Again, these positive and significant correlations among the changes in financial outcomes confirm this study's conceptual framework.

Table 7.3

Pearson Correlation between Changes in Financial Outcome Scales for Each FLEP Group

Change in	Two Module			Two + Module			Three Module		
Financial Measures	1	2	3	1	2	3	1	2	3
Financial knowledge	.56***	.48***	.46***	.39***	.33***	.20*	.47***	.36**	.17
Financial belief		.66**	.60***		.59***	.28**		.67***	.27*
Financial self-efficacy			.68**			.53***			.43***

Note: Numbers below FLEP Groups designate change in financial outcome variables: 1 = Change in financial belief. 2 = Change in financial self-efficacy. 3 = Change in financial behavior
*$p < .05$. **$p < .01$. ***$p < .001$.

7.1.2 Correlation of FLEP score and posttest financial outcome levels

This subsection answered the research question: **Is the extent of participation correlated to the level of posttest financial outcome scores?** The answers were derived from the results of the bivariate Pearson correlations run for the variables: FLEP participation score, financial quiz scores and each of the financial outcomes' posttest levels. The results also determined if the posttest financial outcome levels were correlated to each other. The statistical test was conducted for the whole respondent population and separately for each FLEP grouping.

The results of the Pearson correlations for the entire respondent population are shown in Table 7.4. It showed weak but statistically significant correlations (range of *r* = .17−.22) existed between FLEP participation scores and each of the post-FLEP financial outcomes. Correlations between posttest financial knowledge with the other posttest financial outcomes were moderate to weak and significant (range of *r* = .34−.37). There were moderate and significant intercorrelations (range of *r* = .43−.59) between posttest financial belief, self-efficacy and behavior.

Table 7.4

Pearson Correlations Coefficients between FLEP Participation Score and Post-FLEP Financial Outcome Scales for All FLEP Groups

Financial Outcomes (F Quiz, Scales 1 - 4)	*M (SD)*	Pearson Correlation Coefficients					
		FLE score	F Quiz	1	2	3	4
FLE participation score	20.26 (6.03)		-.042	.22***	.17**	.21***	.19**
Financial Quiz	5.21 (1.68)	(243)		.22***	.11	.12	.11
1. Financial knowledge	16.50 (3.05)	(245)	(243)		.38***	.34***	.37***
2. Financial belief	21.88 (3.37)	(245)	(242)	(245)		.59***	.43***
3. Financial self-efficacy	19.41 (4.45)	(244)	(242)	(244)	(244)		.55***
4. Financial behavior	19.68 (6.59)	(244)	(242)	(244)	(243)	(244)	

Note: Numbers of cases are in parenthesis below the diagonal and Pearson correlation coefficients are above it.
**$p < .015$. *** $p < .001$

The results of the Pearson correlations for each FLEP group are shown in Table 7.5. From the correlation outputs, significant bivariate relationships were identified. It was only in Three Module where the correlations between each posttest outcome level and FLEP participation scores were statistically significant. The correlations of FLEP participation scores were significant and moderate (*r* = .38-.54) with the posttest financial outcomes.

In the case of Two Module, although none of the correlations was statistically significant, there were weak correlations detected between FLEP participation score and posttest levels of financial knowledge, belief and self-efficacy (range of *r* = .12−.19). But the correlations in Two+ Module were mostly flat.

Table 7.5

Pearson Correlation of FLEP Participation Score and Posttest Levels in Financial Outcome Scales for Each FLEP Group

	FLEP Grouping					
	Two Module		Two+ Module		Three Module	
Post-FLEP levels	*M* (*SD*)	*r* (*n*)	*M* (*SD*)	*r* (*n*)	*M* (*SD*)	*r* (*n*)
FLEP participation score	13.76 (1.53)	1 (54)	18.70 (1.87)	1 (125)	28.53 (4.30)	1 (66)
Financial Quiz	5.66 (1.62)	-.031 (53)	5.18 (1.54)	.029 (125)	4.91 (1.92)	.38** (65)
Financial knowledge	16.59 (2.87)	.12 (54)	15.94 (3.09)	.080 (125)	17.48 (2.91)	.38** (66)
Financial belief	21.58 (2.90)	.19 (53)	22.01 (3.12)	.101 (125)	21.88 (4.12)	.54*** (66)
Financial self-efficacy	18.70 (4.29)	.19 (54)	19.27 (4.40)	.055 (124)	20.23 (4.62)	.41*** (66)
Financial behavior	19.41 (6.67)	-.04 (54)	18.96 (6.53)	.041 (125)	21.28 (6.47)	.38** (65)

Note: Standard deviations are in parenthesis below the mean. Number of cases are in parenthesis under Pearson correlation coefficient, *r*.
**$p < .01$. *** $p < .001$

The lack of significant correlations between FLEP participation score and post-FLEP financial outcomes were also the consequence of the restricted ranges of FLEP score values, specially affecting Two Module and Two+ Module groups. Added to this was the ceiling effect particularly for financial belief and self-efficacy variables in which a large percentages of students tended to self-assess with scores at the upper limit of the Likert scale. Thus, the variability of data was so reduced for these two groups that it decreased the statistical power in the correlation between the financial outcomes and the FLEP participation score. So no correlations were detected, or if there were, these were not statistically significant.

Plots of specific post-FLEP financial outcome levels along the FLEP score axis showed the data points of Two Module heavily concentrated at the financial outcome's upper limit and its FLEP score range of 12-15. The same was true for Two+ Module group's data points which were crowded at higher outcome scores and constricted within the FLEP score range of 18-21. But the distribution of

Three Module's data points was more dispersed along a wider FLEP score to for a correlation to be detected.

However, correlations between pairs of posttest financial outcomes for each of the FLEP groups were positive and significant. Pearson correlation results are shown in Table 7.6. These coefficients point to the positive association between one posttest financial outcome and its antecedent outcome. For example, Two Module's financial knowledge is moderately correlated with financial belief $r(51) = .53$ $p < .001$, self-efficacy, $r(52) = .43$ $p < .001$ and behavior, $r(52) = .38$ $p < .01$. This information would be used in multiple regressions to determine whether posttest financial knowledge was a significant predictor of posttest financial belief, self-efficacy and behavior. In this example, posttest financial knowledge would be referred to as an antecedent variable to financial belief, self-efficacy and behavior.

Table 7.6

Pearson Correlation Between Posttest Financial Outcome Scales for Each FLEP Group

Posttest	Two Module			Two + Module			Three Module		
Financial Outcomes	1	2	3	1	2	3	1	2	3
Financial knowledge	.53***	.43***	.38**	.35***	.34***	.38***	.40***	.25*	.28*
Financial belief		.55***	.27*		.49***	.43***		.76**	.53***
Financial self-efficacy			.31*			.61***			.60**

Note: Numbers below FLEP Groups designate posttest level of the following financial outcome variables: 1 = Financial belief. 2 = Financial self-efficacy. 3 = Financial behavior
*$p < .05$. **$p < .01$. ***$p < .001$.

Financial quiz was significantly correlated to Two Module's posttest financial knowledge, $r(51) = .51$ $p < .001$and belief, $r(50) = .29$, $p < .05$. It was not significantly correlated to other posttest financial outcomes in Two Module and the other groups. Multiple regressions in the next section would use posttest financial knowledge as an antecedent predictor of financial quiz.

In summary, Pearson correlations were done in this section to determine whether there were significant associations between extent of FLEP participation and the improvements in financial

outcomes as well as between extent of FLEP participation and post-FLEP financial outcome levels. The expectation was to find positive correlations as signals that FLEP was effective both for the entire respondent population and students in each FLEP group.

The main finding was that only for the Three Module group were the correlations positive and significant. Finding no significant correlations in Two Module and Two+ Module did not necessarily signify ineffective FLEP versions. Rather, it is possible that the restrictive range of values for FLEP participation score that limited the detection of significant correlations for Two and Two+ Module groups. Thus for these two groups, this limitation would not allow for further examination that would utilize correlations between FLEP participation score and financial outcomes for these two groups.

However, pair-wise intercorrelations between posttest financial outcomes were useful information for verifying antecedent variable relationships among these variables. This is necessary to confirm the path hypothesized in the conceptual framework that FLEP participation would increase knowledge, which in turn would lead to more positive attitudes, and that in turn, would lead to more positive financial behaviors.

7.2 Comparison of Financial Outcome Measures between FLEP Groups

After the results of the dependent *t*-tests demonstrated that students in all FLEP groups significantly improved in financial outcomes a month after the FLEP comparisons was done across groups to answer the following questions:

- Did students comprising each group start off at the same financial outcome level? To answer this question, financial outcome variables that measured a pretest, were subjected to a one-way analysis of variance (ANOVA) to examine whether there were

mean differences in the pretest (baseline) levels between students comprising the FLEP groups.

- Did one of the groups perform significantly better in the financial quiz than another? This was answered by using ANOVA to find out whether the mean differences in financial quiz scores between FLEP groups were significant.
- Was one group's level of exposure to the FLEP more effective than another in improving financial outcomes in knowledge, belief, self-efficacy and behavior? To answer, a one way analysis of covariance (ANCOVA) was conducted to determine whether the mean differences in posttest levels were significant between FLEP groups, while controlling for the effect of pretest levels.
- Was there a difference in the contribution to improvement of subjective financial knowledge between the human capital and social capital inputs which conceptually comprised FLEP participation score? The human capital input reflects the students' personal effort in being actively engaged in FLEP activities and the fulfillment of its requirements. Social capital input comes from the students' engagement with others who provided informal and personal support to learning. Multiple regression analyses were conducted to determine what proportion of the variance in financial knowledge was accounted for by FLEP participation and its component parts.

7.2.1 Comparison of baseline levels across FLEP groupings

With random assignment of students to FLEP groups before the FLEP started in doubt, a one-way ANOVA was conducted to gauge if the FLEP groups started off at comparable (not statistically different) financial outcome levels. A visual scan of the self-reported financial outcome pretest levels exhibited in Table 5.27 [crosstabs of financial outcomes scales by FLEP group] showed that the group

means were not equal to each other. In general, each of the groups started at different levels of financial knowledge, attitudes and behaviors.

A one-way ANOVA assessed for mean differences in self-reported pretest subjective financial knowledge levels between FLEP groups. If there was no significant difference at baseline levels, it would indicate that the FLEP groups were likely going into FLEP with comparable levels of financial literacy. However, if there was a significant difference in baseline levels, it would mean that one or more groups have higher financial literacy than others and thus the FLEP groups were not comparable from the start. Existing knowledge affects posttest levels of learning. Thus, if this is ignored or not statistically controlled in the analysis, the improvement in financial outcomes might be all attributed to the FLEP when in fact part of it was the effect of pre-existing financial literacy levels.

7.2.1.1 Baseline mean differences for financial knowledge between FLEP groups

Results of the one-way ANOVA showed that there was not a significant difference in the self-reported pretest means for subjective financial knowledge levels at the $p < 0.05$ among the three groups [$F(2, 249) = 1.35$, $p = .26$]. This indicated that before the start of the FLEP, none of the groups' mean was significantly higher or lower than the others, in terms of the financial knowledge items asked. Hence, the FLEP groups were likely starting off at comparable levels of knowledge.

7.2.1.2 Baseline mean differences for financial attitudes and financial behaviors

Similarly, one-way ANOVA was conducted among FLEP groups for composite pretest levels of financial beliefs, financial self-efficacy and financial behaviors. The summary results of ANOVA are shown in Table 7.7. There were no significant mean differences between groups in the pretest levels for financial knowledge and financial belief scales. But there were significant mean differences between at least two groups for financial self-efficacy, $F(2, 242) = 3.40$, $p = .035$, and financial

behaviors, F (2, 242) = 4.07, p = .018. However, the practical significance of these baseline level differences was weak: 2.8% for financial self-efficacy and 3.3% for financial behavior.

Table 7.7

Summary Table of ANOVA for Pretest Scores of Financial Outcome Scales for Each FLEP group

Financial outcomes (pretest composite scores)	FLEP Grouping			F	η_p^2
	Two Module (n=54)	Two + Module (n=125)	Three Module (n=66)		
Financial knowledge	12.74	12.12	12.95	1.75	.014
	(2.81)	(3.08)	(3.54)	[2, 242]	
Financial belief	18.75	18.90	19.22	0.166	.001
	(4.30)	(4.42)	(5.07)	[2, 240]	
Financial self-efficacy	15.85_{ab}	15.91_{a}	17.89_{b}	3.40*	.028
	(4.94)	(5.34)	(5.48)	[2, 240]	
Financial behavior	16.50_{ab}	16.39_{a}	19.05_{b}	4.07*	.033
	(6.36)	(6.05)	(6.90)	[2, 241]	

Note. Standard deviations appear in parentheses below means. Means with differing subscripts within rows are significantly different at the $p < .05$ based on Tukey-Kramer *post hoc* tests. Degrees of freedom appear in brackets below F-statistic.
* $p < .05$.

To find out which of the FLEP group's baseline levels were significantly higher than another group's, Tukey-Kramer *post- hoc* test was used. In the case of financial self-efficacy scale, the test demonstrated that the pretest score mean for Three Module group was significantly higher than that of the Two+ Module group by a mean difference of 1.98, 95%CI [0.07, 3.89], p = 0.04. The pretest score mean for Three Module group was higher than that of the Two Module group by a mean difference of 2.04, 95%CI [-0.26, 4.34] but was marginally significant, p = 0.09.

For financial behavioral scale, Tukey-Kramer *post- hoc* test detected that the pretest score mean for Three Module group was significantly higher than those of the other groups. The pretest mean difference between that of Three Module and Two+ Module was significant, 2.65, 95%CI [0.36, 4.94], p = 0.018. Whereas, the mean difference between that of Three Module with Two Module was marginally significant, 2.54, 95%CI [−0.21, 5.30], p = 0.077. Composite pretest levels of financial behavioral subscales were also subjected to the same test.

The results of ANOVA for the financial behavioral subscales are shown in Table 7.8. It revealed significant mean differences for "spending wisely," F (2, 242) = 3.64, p = .028 and "using a

budget," F (2, 242) = 3.40, p = .035. The practical significance of these baseline level differences was weak: 3.0% for "spending wisely" and 2.7% for "using a budget." Mean differences were not significant for "tracking cash flows" and "saving-spending ratio."

Table 7.8

Summary Table of ANOVA for Pretest scores of Financial Behavior Scales for each FLEP group

Financial behavior subscales (pretest composite scores)	FLEP Grouping			F	η_p^2
	Two Module (n=54)	Two + Module (n=125)	Three Module (n=66)		
Spending wisely	4.74_a	5.18_{ab}	5.91_b	3.78*	.030
	(2.13)	(2.42)	(2.53)	[2, 242]	
Using a budget	4.24_{ab}	3.96_a	4.88_b	3.40*	.027
	(2.23)	(2.20)	(2.59)	[2, 242]	
Tracking cash flows	4.37	4.10	4.68	1.19†	.010
	(2.43)	(2.28)	(2.74)	[2, 175]	
Saving-spending ratio	3.15	3.16	3.43	1.16	.010
	(1.20)	(1.27)	(1.24)	[2, 241]	

Note. Standard deviations appear in parentheses below means. Means with differing subscripts within rows are significantly different at the $p < .05$ based on Tukey-Kramer *post hoc* tests. Degrees of freedom appear in brackets below F-statistic.
* $p < .05$. †Brown-Forsythe statistic and the degrees of freedom in brackets below it are referred to instead of ANOVA when the assumption of homogeneity of variance for ANOVA is not met.

Tukey-Kramer *post- hoc* tests indicated that for "spending wisely" the only significant pair-wise difference was between Three Modules (M = 5.91, SD = 2.13) and Two Module (M = 4.74, SD = 2.13). For "using a budget" the only significant pair-wise difference was between Three Module (M = 4.88, SD = 2.59) and Two+ Module (M = 3.96, SD = 2.20).

It could be observed that where ANOVA found significant mean differences in pretest scores, Three Module registered the highest for financial self-efficacy and financial behavior scales. It also posted the highest for the subscales, "spending wisely" and "using a budget." A plausible explanation as to why Three Module had higher pretest levels of self-efficacy and behavior (specifically in "spending wisely" and "using a budget") was the fact that they experienced a longer time in the year-long Budget and Checkbook Project activities than the other two groups whose exposure was only two months before the survey was taken. They also had more activities and therefore higher FLEP participation scores. It is possible that the reference time recalled for their pretest levels could have

been more recent, like just before the Math Fair, rather than the start of the school year. Thus, Three Module groups' self-rating of their baseline levels was significantly higher than that of other groups.

Furthermore, small to moderate correlations of Three Module's pre-FLEP self-efficacy were significant with "having odd jobs" and "savings at home." Among Three Module's students, 45% had odd jobs and 88% had savings at home, both percentages higher than the other groups.

7.2.2 Comparison of the effect of FLEP exposure on financial outcomes' posttest scores

This section compares the financial outcome measures between one and another FLEP group as an indication of the relative effectiveness of the three program variants.

7.2.2.1 Comparison of financial quiz scores across FLEP groupings

Since students' financial objective knowledge was tested by taking one financial quiz after the FLEP, conducting a one-way analysis of variance (ANOVA) was an appropriate test to find out if one group's quiz average was significantly higher than another. This test compared the financial quiz score means between subjects of the FLEP groups to determine if mean differences were significant. For results of an ANOVA to be meaningful, certain assumptions had to be met. Levene's Test [$F(2, 240) = 1.853$, $p = .159$] confirmed that the assumption of homogeneity of variance for ANOVA had been met.

Results of ANOVA showed that there was a significant difference in the financial quiz mean scores at $p < .05$ level in at least one pair of the FLEP groups [$F(2, 240) = 3.04$, $p = 0.05$]. To determine which FLEP group pair(s) had significantly different financial quiz mean scores, Tukey-Kramer *post hoc* test was selected in this case where the assumption for equal group sizes was violated and the homogeneity of variance met. Results of the Tukey-Kramer *post- hoc* test showed that the score of Two Module group (M=5.66, SD=1.62) was significantly higher by a mean difference of 0.75, 95%CI [0.03, 1.48], $p = .040$, than that of the Three Module group (M=4.91, SD=1.68), but not significantly higher than that of Two+ Module group (M=5.18, SD=1.54, $p = 0.18$). The difference in mean scores,

0.26, 95%CI [-0.33, 0.87], p = 0.54, between the Two+ Module and the Three Module group was not statistically significant.

The result from the ANOVA appeared counterintuitive because Three Module group which had the highest level of FLEP exposure yielded the lowest average quiz score and the Two Module group that had the lowest level of FLEP exposure had the highest; and their mean scores were significantly different. A disclosure of how respondents were selected could explain why Two Module students got the highest scores. A class made up of students who had difficulty understanding English and those with learning disabilities were not asked to take the outcome survey. Thus on the average, the composition of Two Module were likely of better cognitive abilities than the other groups; that could explain the higher scores.

The other reason could be due to differences in content taught or emphasized to each group by teachers. Given the teachers' flexibility in choosing what subject matters to teach or emphasize, there could have been a discrepancy across groups in content taught to and remembered by the students. In addition, the ten-item financial quiz was too limited in the range of contents for it to broadly capture all that had been taught to the students.

Lastly, in the absence of a pretest, there is no way of knowing how much of the results of financial quiz were due to existing knowledge before the FLEP.

7.2.2.2 Comparative effects of FLEP variants on financial knowledge

Earlier, it was argued that the raw score differences between the posttest and pretest scores did not reflect change in actual abilities. A big raw score mean difference in financial knowledge before and after the FLEP did not necessarily indicate that the student reporting so actually ended up "know[ing] it well" after the FLEP. For example, if at the end of the program, most of the students had posted the highest possible score, students with lower pre-FLEP financial literacy would register larger raw score differences for having started at lower pretest scores. This likely would happen if the

quiz were easy or, in a Likert scale, the highest response option easy to attain. Thus, using ANOVA on raw score difference will give more emphasis to students who started at lower levels of financial literacy and less to those who knew more before participating in the FLEP. For this reason, conducting ANOVA on raw score differences would not be appropriate to compare impact between groups. What is more appropriate is to use an analysis of covariance (ANCOVA) where the pretest is controlled within groups so the variance attributable to FLEP exposure can be measured. ANCOVA is the appropriate and stronger test when the pretest and post correlation coefficient is far from the ideal 1.0, as was the case in this study. However, if the correlation is close to 1.0, ANOVA on raw score difference would be better (Garson, 2012).

Notes on ANCOVA

An analysis of covariance (ANCOVA) has been used to compare posttest means while using the pretest means as a covariate and the grouping variable as the factor. In essence, ANCOVA enhances the precision of comparing the effects between groups by reducing within-group error variance; and adjusts comparisons between groups for disparities by eliminating confounding variables. Statistically, it controls the effects of the pretest (covariate) to reduce within group differences (error) caused by the variation of students' financial outcome levels before the FLEP; so that the posttest mean differences attributable to the FLEP group variable (independent variable) is exposed. So it adjusts the posttest means (dependent variable) for differences among FLEP groups on the pretest means (Dimitrov & Rumrill, 2003). To be meaningful, ANCOVA' assumptions had to be met. These were normality, linearity, homoscedasticity (homogeneity of variance), and homogeneity of regression. The **partial eta squared** (η_p^2) term was reported to give an estimate of the effect size or the practical significance of the variable it pertains to. It showed how much the covariate, factor and interaction accounted for an amount of variance of the dependent variable compared to the error term.

ANCOVA was conducted to compare the effect of the FLEP at three levels of exposure (Two Module, Two+ Module and Three Module (coded as 1, 2, and 3, respectively) on the following dependent variables: subjective financial knowledge, attitudes and behaviors. The pretest mean was the covariate and FLEP group as the factor. The statistical test was run for each of the financial outcome scales to control for the effects due to the baseline scores within the groups. Then the test would determine and compare between groups the part of the posttest variability that can be attributed to the FLEP exposure.

ANCOVA for Financial knowledge (subjective)

For financial knowledge, the preliminary test assessing the homogeneity of regression assumption yielded an interaction term (pretestK*FLEPgroup) that was not significant, $F(2, 239) = .568$, $p = .567$ and had a very small estimated effect of 0.5% (effect size, $\eta_p^2 = .005$). The null hypothesis that the three regression lines (linear dependence of the posttest on pretest) all had the same slope was not rejected. Because the regression lines were homogeneous, the relationship between the pretest and the posttest did not differ significantly as a function of the FLEP group. In other words, the effects of the FLEP group on the posttest were the same for all pretest level values that the students started with. With this assumption met, the interaction term was removed to increase the power of the main effects of the pretest and FLEP group exposure. By removing the interaction term, the model was essentially fitted with three parallel lines. Then the effect of the FLEP group exposure on the posttest was estimated and compared.

The result of the traditional ANCOVA for financial subjective knowledge is presented in Table 7.9. It shows the main effects of the group source (FLEP group) and the financial subjective knowledge pretest score (Pretest knowledge).

The assumption of homogeneity of variance for the one-way ANCOVA (for main effects of subjective financial knowledge) has been met as indicated by Levene's test, $F(2, 242) = 1.37$, $p = .256$.

Table 7.9

Analysis of Covariance of Posttest Financial Subjective Knowledge as a Function of FLEP Group, with Pretest Financial Subjective Knowledge as Covariate

Source	Sum of Squares	*df*	Mean Square	*F*	*P*	η_p^2
Pretest knowledge	488.83	1	488.83	70.07	.000	.225
FLEP group	57.94	2	28.97	4.15	.017	.033
Error	1681.30	241	6.98			

The FLEP group evaluated the null hypothesis that the student adjusted means for subjective financial knowledge were equal. As seen in Table 7.9, the FLEP group's main effect was significant, $F(2, 241) = 4.15$, $p = .017$, with posttests scores adjusted to take account of pretest scores. Thus, the hypothesis that there is no difference between FLEP group exposure effects can be rejected. This suggested that there was a difference in the separation between the parallel regression lines of each FLEP groups' pretest on the posttest. However the estimated effect size of $\eta_p^2 = .033$ indicated that the practical significance of the mean difference between FLEP groups effects was small: only 3.3% of the total financial knowledge posttest variance was attributable to the FLEP group effect, while controlling for the effect of the students' pretest scores. However, because of the subjective nature of self-assessment, the difference in group effects was likely underestimated. in all probability, a response option like "Know it well" was overestimated by students in Two Module and Two+ Module, if there was a way to accurately compare it to the same response by students in Three Module. This implied that in the final analysis, each group should be studied separately using multiple regressions that can separately estimate the effects of the independent and intervening variables on the financial outcomes.

To continue, ANCOVA estimated the effect of FLEP group by computing the separation of the regression lines (essentially the difference in the *y*-intercepts), and testing for significant differences between FLEP groups. Which FLEP group accounted for the biggest change in financial knowledge? To answer this, the test assessed the differences among the adjusted posttest means for the three

groups. The estimated adjusted means for the posttests were as follows: 16.48, 95% CI [15.77, 17.18] for Two Module; 16.11 95% CI [15.64, 16.57] for Two+ Module; and 17.27 95% CI [16.63, 17.61] (Three Module). Covariates in the model were evaluated at the pretest level = 12.48, the gradient or slope of posttest on the pretest.

Pair-wise comparisons using the Bonferroni test showed that the estimated marginal posttest mean for Three Module was significantly higher than that of Two+ Module, by M = 1.17, 95% CI [0.19, 2.14], p < .013. The marginal mean of Three Module is higher, but not significant, than that of Two Module, by M = 0. 80, 95% CI [-0.37, 1.97], p < .306. The other pair-wise comparisons of posttest means between Two Module and Two+ Module were not significant. In other words, ANCOVA found that participation in Three Module improved subjective financial knowledge by an average score of 1.17 units more than that for Two+ Module and about 0.80 units more than that of the Two Module. These results verified the expectation that Three Module which had the highest FLEP participation score mean of 28.5 generated the highest estimated post-FLEP financial knowledge. Although, Two+ Module, with the second highest FLEP participation score mean of 18.7 produced less than the estimated post-FLEP financial knowledge marginal mean than that of Two Module, the difference was not significant.

To complete the interpretation of the results of the ANCOVA in Table 7.9, note that the pretest effect on the posttest, controlling for the FLEP group effect, was significant, $F(1, 237) = 70.07$, p < .001 and had a moderate practical significance of 22.5% (effect size, η_p^2 = .225). Another way to put it is that the pretest accounted for 22.5% of the improvement in financial knowledge (posttest variance) controlling for the FLEP group effect. This also indicated the linear association between the pretest and posttest levels which with Pearson correlation test revealed a moderate relationship, $r(243) = .485$, p < .001. It goes to show that the pretest should not be ignored in the comparison of

FLEP group effects on the change in financial knowledge. Controlling its effects made the comparison of FLEP group effects more precise.

To find out in which aspect Three Module students fared the best, the items that comprised financial knowledge scale were subjected to ANCOVA. Results revealed that the FLEP group's main effect was significant for "balancing a checkbook," $F(2, 239) = 10.36$, $p < .001$, $\eta_p^2 = .208$, and "factors for car loan," $F(2, 239) = 10.55$, $p < .001$, $\eta_p^2 = .081$. The practical significance of the difference between FLEP group effects on increase in knowledge about "balancing a checkbook" was moderate to strong at 20.8%, whereas for "factors for car loan, it was 8.1%. The Three Module group was expected to do better at "balancing a checkbook" because they were the only group that was exposed to it. Also, Three Module group experienced a more in-depth process of acquiring a car loan with actual loan officers, and so was expected to know more about "factors for car loan" than other groups. However, all groups went to the Math Fair where getting a car loan was part of the experience of students who decided to buy a car.

Comparing the FLEP group effects on increasing knowledge and skills in "balancing the checkbook," participation in Three Module increased average score to 0.50 units more than that for Two Module and about 0.70 units more than that of Two+ Module. In terms of accounting for the improvement in knowledge and skill in "balancing a checkbook," Three Module was significantly better than Two Module by a practical significance of 9% and compared to Two+ Module by 21%. In terms of increasing the knowledge in "factors for car loan," Three Modules students significantly increased knowledge over Two Module by a practical significance of 3% and better at it than Two+ Module by 8%. These findings validated the statements of parents whose children participated in the Checkbook Project. Some of them mentioned that their children learned how to balance checkbooks as well as the process of acquiring a loan. One of the parents disclosed that after the FLEP they assisted their child in opening a checking account despite being against it months earlier.

7.2.2.3 Comparative effects of FLEP variants on financial belief

For financial belief, the preliminary test evaluating the homogeneity of regression assumption yielded a significant interaction between FLEP group and the pretest (pretest*FLEP group), $F(2, 237) = 3.89$, $p = .022$. With the interaction term significant, the hypothesis that there is no difference between FLEP group effects on the financial belief posttest was rejected. That meant that the slope of the posttest on the pretest was not the same for the three groups, i.e., the regression lines were not all parallel to each other. Since the homogeneity of regression assumption was not met, a traditional ANCOVA (where the interaction term is removed) could not be run. Instead, ANCOVA for financial belief retained the interaction term along with the pretest and the FLEP group terms, as shown in Table 7.10.

Table 7.10

Analysis of Covariance of Posttest Financial Belief as a Function of FLEP Group, with Pretest Financial Belief as Covariate

Source	Sum of Squares	*df*	Mean Square	*F*	*P*	η_p^2
Pretest belief	1084.15	1	1084.15	178.75	.000	.430
FLEP group	48.33	2	24.16	3.98	.020	.033
Pretest *FLEP group	47.13	2	23.57	3.89	.022	.032
Error	1437.43	237	6.07			

Note: The corrected model's *R*-Squared = .478 (Adjusted *R*-Squared = .467). Computed using alpha = .05

The table shows the main effects of pre-FLEP financial belief (Pretest belief) and FLEP group as well as the interaction effect of the pretest and FLEP group (Pretest*FLEP group). As seen in Table 7.10, the main effect of the pretest belief on the posttest, controlling for the FLEP group effect and the interaction term, was highly significant, $F(1, 237) = 178.75$, $p < .001$. It had a moderate to large estimated effect size $\eta_p^2 = .430$, which meant that it accounted for 43.0% of the posttest variance controlling for the other variables' effects. This also indicated that there was a linear relationship between the pretest and posttest levels, measured with Pearson's correlation coefficient suggesting a moderate to strong relationship, $r(241) = .677$, $p < .001$. This finding implied that the students'

baseline financial belief level's moderate influence on the post-FLEP belief level could not be ignored as one would do in comparing group effects via ANOVA. Rather, its effect on the posttest had to be controlled along with interaction term to more precisely measure FLEP group's effect on change in financial belief.

The results showed that the FLEP group's main effect on the posttest was significant, $F(2, 237) = 3.98$, $p = .020$, $\eta_p^2 = .033$, with pretest scores and interaction term controlled. The estimated effect size revealed that 3.3% of the total financial belief posttest variance was attributable to the difference in at least two main FLEP group effects, while controlling for the effect of the students' pretest scores and the interaction of the FLEP group on the pretest scores. Note further that the FLEP group's main effect size was comparable to that of the interaction term, $\eta_p^2 = .032$. The interaction of the Pretest and FLEP group accounted for 3.2% of the posttest variance controlling for the effects of the FLEP group and the pretest score. With an interaction term present, the interpretation of the FLEP group's main effect was not straightforward.

The interaction between FLEP group and pretest required that in order to interpret the relationship between the pretest and the posttest, the FLEP group has to be specified. This relationship is characterized by the slope of the line. The difference in slopes could be depicted on a plot of the posttest versus the pretest as three non-parallel lines; each line representing the relationship between the pretest and posttest scores for each group. To estimate the slopes for the three FLEP groups, another model was used. This was done by deriving the prediction equations for each FLEP group, shown in Table 7.11, from the SPSS GLM-UNIVARIATE (ANCOVA) output called Parameter Estimates. To compare the effects of each FLEP group on the posttest financial belief, it was necessary to specify the pretest levels. Here, the three pretest levels used were 16, 19 and 22 which corresponded to the 25th, 50th, and 75th percentile for the pretest score.

Table 7.11

Prediction Equations Derived from Parameter Estimates of the ANCOVA for Financial Belief

FLEP Group	Prediction Equation	Pretest Level at 25th 50th 75th Percentile		
		16	19	22
		Adjusted Posttest level at Percentile		
Two Module	posttest score = 13.776 + 0.417*pretest score	20.44	21.69	23.94
Two+ Module	posttest score = 13.694 + 0.440*pretest score	20.73[a]	22.05	23.37
Three Module	posttest score = 9.603 + 0.639*pretest score	19.82a	21.74	23.66

[a] The mean difference between this pair of adjusted posttest means were significant, $p = .043$.

For each pretest level, the differences between Two and Two+ Modules, Two and Three Modules, and Two+ and Three Modules, were evaluated separately. The model used in estimating separate slopes was extended by adding the **lmatrix** subcommand in SPSS to compare FLEP groups pair-wise at the three pretest levels. The subcommand also obtained the adjusted posttest means for each FLEP group that corresponded to the different pretest levels, 16, 19 and 22 (Table 7.11). Results indicated that the only significant difference in adjusted posttest means was detected at pretest level 16, between Two+ Module, $M = 20.73$, 95% CI [20.22, 21.25] and Three Module, $M = 19.82$, 95% CI [19.11, 20.54] with a mean difference of 0.91, 95% CI [-1.79, -0.03], $p = .043$.

The effect of exposure among the FLEP groups was not the same at all levels of the pretest. For students with low pretest levels such as 16, in financial belief, Two+ Module was significantly more effective in improving financial belief than Three Module. For higher pretest levels, there were no significant differences among all three Groups in improving financial belief. The effectiveness of the FLEP in improving financial belief depended on the participants' belief levels before the program started.

The important difference among the FLEP groups found in this analysis was the difference among the slopes of the linear dependence of posttest financial belief on the pretest. The rate of improvement in financial belief (change in the posttest per unit increase in pretest) was greater for exposure in Three Module group (slope = 0.639, *SE* = 0.061) than in Two Module (slope = 0.417, *SE*

=0.100) or Two+ Module (slope = 0.440, *SE* = 0.079) groups. The difference between the slopes of Two+ Module and Three Module was significant, $t(186) = -2.52$, $p = .012$. Similarly, there was a significant difference between the slopes of Two Module and Three Module $t(174) = -2.22$, $p = .027$.

In other words, the groups were enhancing student's financial beliefs at different rates. The pace of improvement in financial belief was 1.5 times greater for Three Module students compared to the rate of gain of the students of the other groups. This could be a function of the students' extent of participation: Three Module students had the highest participation score among the groups. However, it was not clear how to factor in the time period of change for Three Module students who started participating in the sustained year-long Budget and Checkbook Project seven months ahead of the others; then with the additional two months, engaged in Career Investigation and Math Fair with the other groups.

7.2.2.4 Comparative effects of FLEP variants on financial self-efficacy and behaviors

An ANCOVA was run to test for the posttest mean differences attributed to the effects of the FLEP groups on financial self-efficacy and financial behaviors, while controlling for their respective pretests. The preliminary tests for the homogeneity of regression suggested that this assumption was met both for financial self-efficacy and financial behavior.

The results of ANCOVA for financial self-efficacy and financial behavior are shown in Table 7.12. The results of the ANCOVA both yielded very weak, not statistically significant results and very low effect sizes for financial self-efficacy, $F(2, 239) = 0.705$, $p = .50$, $\eta_p^2 = .006$ and for financial behavior, $F(2, 240) = 0.182$, $p = .83$, $\eta_p^2 = .002$, respectively. These results indicated that there was no significant difference in the effects of the FLEP group on financial self-efficacy and behaviors. In other words, the three FLEP versions' effectiveness on these outcomes was comparable.

However, the effects of the pretest levels on the posttests were both statistically significant and had large estimated effect sizes: for financial self-efficacy, $F(2, 239) = 317.4$, $p < .001$, $\eta_p^2 = .57$

and financial behaviors, $F(2, 240) = 526.7$, $p < .001$, $\eta_p^2 = .69$. It may have been remote to detect differences in group effects on financial self-efficacy and behaviors because the FLEP versions intended to only increase knowledge within a short period of time.

Table 7.12

Analyses of Covariance of Posttest Financial Self-Efficacy and Financial Behaviors as a Function of FLEP Group, with the Respective Outcomes' Pretests as Covariates

Source	Sum of Squares	*df*	Mean Square	*F*	*p*	η_p^2
Financial self-efficacy						
Pretest	2705.23	1	2705.23	317.39	.000	.570
FLEP group	12.01	2	6.01	0.705	.495	.006
Error	2037.11	239	8.52			
Financial behavior						
Pretest	7092.93	1	7092.93	526.716	.000	.687
FLEP group	4.91	2	2.46	0.182	.833	.002
Error	3231.92	240	13.47			

Additional factors come into play to change attitudes and behaviors (Huston, 2010). These factors include family influences, existing biases and beliefs, and the level of self-mastery as regards money, saving and spending. This fact may explain why the influences of baseline levels of self-efficacy and behavior pretty much accounted for their respective post-FLEP levels of these outcomes. If there was a detectable difference in direct influence of FLEP participation score, these were very weak, .6% and .2%, respectively.

Results of the ANCOVA conducted on the financial behavior subscales are shown in Table 7.13. This yielded practically no mean difference in FLEP group effects on their respective posttests for spending wisely, $F(2, 241) = 0.02$, $p = .98$, $\eta_p^2 = 0$, budgeting, $F(2, 241) = 0.18$, $p = .83$, $\eta_p^2 = .002$, tracking cash flow, $F(2, 241) = 0.43$, $p = .65$, $\eta_p^2 = .004$, and Saving/spending ratio, $F(2, 240) = 0.71$, $p = .43$, $\eta_p^2 = .006$. the results suggested that none of the FLEP group effects fared significantly better at changing any of the students' behavior in spending wisely, budgeting, tracking of money and their saving/spending ratio.

Table 7.13

Analyses of Covariance of Posttest Financial Behavior Subscales as a Function of FLEP Group, with the Respective Subscales' Pretests as Covariates

Source	Sum of Squares	*df*	Mean Square	*F*	*p*	η_p^2
Spending wisely						
Pretest	1026.71	1	1026.71	788.80	.000	.766
FLEP group	0.06	2	0.03	0.02	.978	.000
Error	313.69	241	1.30			
Budgeting						
Pretest	1004.63	1	1004.63	500.33	.000	.675
FLEP group	0.73	2	0.37	0.18	.833	.002
Error	483.91	241	2.01			
Tracking						
Pretest	1172.79	1	1172.79	727.83	.000	.751
FLEP group	1.39	2	0.69	0.43	.651	.004
Error	388.34	241	1.61			
Saving/spending ratio						
Pretest	137.73	1	137.73	194.10	.000	.447
FLEP group	1.01	2	0.50	0.71	.493	.006
Error	170.31	240	0.71			

Actually, the post-FLEP outcome levels were largely accounted for by their respective pre-existing levels of financial behavior subscales before the FLEP: spending wisely, $F(2, 241) = 788.80$, $p < .001$, $\eta_p^2 = .77$, budgeting, $F(2, 241) = 500.33$, $p < .001$, $\eta_p^2 = .68$, tracking cash flow, $F(2, 241) = 727.83$, $p < .001$, $\eta_p^2 = .75$, and Saving/spending ratio, $F(2, 240) = 194.10$, $p < .001$, $\eta_p^2 = .45$. As results of the ANCOVA demonstrated, their pretests' effects on the posttests were very strong and statistically significant with effect sizes being large: 77%for spending wisely, 68% for budgeting, 76% for tracking of money and a moderate to strong 44.7% for their saving/spending ratio.

Based on these results, the small improvements in financial behavior when compared by FLEP group, proved to be no different from each other. The effects of the three FLEP versions were comparable to each other.

As explained earlier, other factors outside of the FLEP such as parental influence, degree of self-discipline in spending, and financial biases actively influenced financial behaviors (Huston 2010). The versions of FLEP may have not been designed to change financial behaviors. Improvements

reported by the students could have been facilitated by strong influences like their parents and existing positive personal dispositions and behaviors regarding money. For example, students who already saved money planned to save more or to save regularly after the FLEP. Another student who already saved money for pricey consumables before the FLEP intended to now save for college.

In summary, it is in this subsection that the differential effects of the FLEP variants were detected. Significant differences in outcomes as a function of FLEP group were found only in financial quiz, financial subjective knowledge and financial beliefs.

In the case of financial objective knowledge, financial quiz score means were significantly higher for students in Two Module than those in Three Module but not significantly higher for students in Two+ Module. However, without a pretest quiz that could have been accounted for, it was not clear whether the difference in effectiveness of the FLEP groups on the financial quiz scores were partly due to existing knowledge.

Comparison of the effects of FLEP exposure on financial subjective knowledge revealed that students in the Three Module posted the highest improvement. It was significantly higher than that for Two+ Module group but was not significantly higher than that for Two Module group. Among the financial knowledge aspects measured in the outcome survey, Three Module students were significantly more knowledgeable in “balancing a checkbook” and in “factors for car loans.”

The effect of FLEP exposure on financial belief showed a main effect of the program and an effect of the interaction between the pretest and the FLEP. It was found that the rate of improvement in financial belief per increase in the pretest was highest for students in Three Module. In terms of effectiveness, Two Module was significantly better at increasing financial belief for students starting at lower pretest levels. There was no significant difference in effectiveness across groups for students starting at mid to high baseline levels of financial belief.

No significant differences were found among FLEP group effects on post-FLEP financial self-efficacy and behavior.

7.2.3 Components of FLEP Participation Score as Predictors of Financial Knowledge

Earlier results generated from one way ANCOVA showed that there was a significant adjusted mean difference for the posttest in subjective financial knowledge between groups. In ANCOVA, the independent variable was a categorical grouping variable. Multiple regressions for each FLEP group were used to examine the effect of the extent of students' FELP participation on their respective posttest financial knowledge. The independent variable took the form of summated Total FLEP participation scores. This gave a direct indication of how the variance in FLEP participation related to the degree of improvement in financial subjective knowledge. Recognizing the significant influence of each groups' baseline financial knowledge levels, this variable was also used as another predictor in the regressions.

A stepwise linear regression model for financial subjective knowledge was created first to determine the contribution of the extent of FLEP participation to each FLEP group's model, with the pretest score as a cofactor. The regression models were created according to the following relationship equation:

Posttest subjective knowledge = *f* (Pretest subjective knowledge, extent of FLEP participation)

The second stepwise linear regression model was conducted by replacing extent of FLEP participation with its components—human capital and social capital inputs—and using these as predictors. By splitting the extent of FLEP participation into its components, and using them as predictors in the regression in place of the total FLEP participation score, the contribution of each input was determined. Specifically, this determined the partial contributions of human capital transmission and influence of social learning agents to the variance of the posttest financial

subjective knowledge. The pretest level was also used as a cofactor in the regressions. It was assumed that human capital input mattered, but does social capital within the program versions matter in enhancing financial knowledge?

Human capital composite score included class participation and fulfillment of requirements in each of the modules that students participated in. The social capital composite score included perceived personal support from the credit counselor, friends, and their teachers in enhancing their financial knowledge. The regression models were created based on this relationship equation:

Posttest subjective knowledge = *f* (Pretest subjective knowledge, human capital transmission, social learning agents)

Multiple regression analysis revealed how much of the participants' improvement in financial subjective knowledge was predicted by the extent of FLEP participation (FLEP score) and baseline financial knowledge. The results of this first set of regressions are shown in Table 7.14.

Table 7.14

Multiple Regression Analysis Relating Pretest Financial Knowledge and FLEP Participation Score to Posttest Financial Knowledge for Each FLEP Grouping

Predictor Variables	Two Module			Two + Module			Three Module		
	B	β	sr^2	*B*	β	sr^2	*B*	β	sr^2
(Constant)	8.60			9.15			4.03		
	(3.20)			(2.71)			(2.09)		
Pretest financial	0.57	.55***	.298	0.41	.42***	.163	0.46	.56***	.309
knowledge	(0.12)			(0.08)			(0.08)		
FLEP participation score	0.06	.03	.001	0.10	.06	.004	0.26	.39***	.152
	(0.22)			(0.14)			(0.06)		
Model	1			2			3		
R	.56			.41			.67		
R^2	.31***			.17***			.45***		
F	11.54 [2, 51]			12.46 [2, 122]			25.94 [2, 63]		
No. of Observations	54			125			66		

Note: Standard errors appear in parentheses below unstandardized coefficients, *B*. Degrees of freedom in brackets after each F statistic derived from ANOVA. Squared semipartial correlation coefficient, sr^2, provided the unique contribution of the predictor to the R^2 of the model.
*p < .05. **p < .01. ***p < .001

All of the FLEP group's regression models were significant. Each group's combination of the two variables varied in accounting for their respective improvements in post-FLEP financial

knowledge as indicated by each model's coefficient of determination, R^2: 31% for Two Module, 17% for Two+ Module and 45% for Three Module. Each predictor's unique contributions to the variance of their respective groups' post-FLEP knowledge were indicated by the squared semipartial correlation coefficient, sr^2. Pretest financial knowledge contributed 30% of Two Module's model, 16% of Two Module's model and 31% of Three Module's model.

It was only for Three Module's model that FLEP participation score's unique contribution was significant, accounting for 15% of the variance of the group's post-FLEP knowledge. As explained in earlier sections of this chapter, FLEP scores for Two Module and Two+ Module groups would not account significantly for any proportion of the posttest because the instrument's limitation brought about lack of posttest variability on the FLEP score. FLEP scores accounted for 0.1% of Two Module's total variance and 0.4% of Two+ Module's total variance; both not significant.

For the second set of regressions, FLEP participation score was replaced by human capital and social capital inputs. This was done to examine how much of the improvement in posttest financial knowledge was accounted for by these inputs. The results generated from the second set of regressions are shown in Table 7.15. For each FLEP model, the proportion of the total variance explained by their three predictors was significant and practically the same as the previous regression models: 32% for Two Module, 18% for Two+ Module and 45% for Three Module, as indicated by their R^2 values.

The unique contributions of human capital and social capital inputs to each FLEP group model were compared using their respective squared semipartial correlation coefficients. The only significant contribution to a model was observed for Three Module. Human capital input had a 4.7% contribution to the model and social capital input had 4.6%. Both inputs equally explain the posttest variance. However, summing up these contributions (9.3%), it was less than that of FLEP as a

predictor in the previous regression (15.2%). There was likely an interaction term that was not considered here.

Table 7.15

Multiple Regression Analysis Relating Pretest Financial Knowledge, Human and Social Capital Inputs to Posttest Financial Knowledge for Each FLEP Grouping

Predictor Variables	Two Module			Two + Module			Three Module		
	B	β	sr^2	*B*	β	sr^2	*B*	β	sr^2
(Constant)	7.74			10.20			2.74		
	(3.43)			(3.28)			(2.78)		
Pretest financial knowledge	0.58	.57***	.306	0.42	.42***	.169	0.46	.56***	.306
	(0.12)			(0.08)			(0.08)		
Human capital input	0.22	.08	.007	-0.08	-.03	.001	0.36	.23*	.047
	(0.31)			(0.26)			(0.16)		
Social capital input	-0.05	-.02	.0	0.27	.12	.013	0.22	.23*	.046
	(0.27)			(0.19)			(0.10)		
Model	1			2			3		
R	.56			.42			.67		
R^2	.32***			.18***			.45***		
F	7.80 [3, 50]			8.79 [3, 121]			16.57 [3, 62]		
No. of Observations	54			125			66		

Note: Standard errors appear in parentheses below unstandardized coefficients, *B*. Degrees of freedom in brackets after each F statistic derived from ANOVA. Squared semipartial correlation coefficient, sr^2, provided the unique contribution of the predictor to the R^2 of the model.
*p < .05. **p < .01. ***p < .001

For the other two groups, the unique contribution of human capital input to Two Module's model was .7% and that of Two+ Module was .1%. In terms of social capital input, the unique contribution to Two Module's model was *nil* and that of Two+ Module was 1.3%. Replacing FLEP scores to its components may have produced a small variation that made their contributions to the model slightly bigger than FLEP scores' contributions of .1% for Two Module and .4% for Two+ Module.

Regression coefficients gave an idea of the relationship of human capital and social capital inputs to post-FLEP financial knowledge. By examining the regression coefficients (*B*) in Two Module, the value for human capital input was 0.22 and for social capital input was -0.05. This indicated that in predicting the posttest financial knowledge level for this group, human capital input was stronger.

Thus, for this group, the outcome appeared to be accounted for by the students' active participation in the modules and the submission of requirements and not so much by the support from others.

In contrast, the regression coefficients (*B*) in Two+ Module for human capital input were -0.08 and for social capital input was 0.27. So, for this group, predicting the posttest financial knowledge level will get more social capital input. These results suggested that the personal and informal learning from others in the school-based FLEP accounted more for the knowledge outcome than active participation did.

In predicting the knowledge outcome for Three Module, human capital input (*B* = 0.36) was slightly larger than social capital input (*B* = 0.22). This indicated that students' active participation in the modules and the submission of requirements were as important as learning from the other actors in the FLEP.

7.3 Effects of FLEP Score, Antecedent Financial Outcomes and Intervening Factors

The sub research question: **"Do the changes in financial outcomes (financial knowledge levels, financial attitudinal indicators and financial behaviors) differ relative to parental influence, peer influence, access to money, and having a job outside the home?"** would be answered through multivariate analysis. The effect of intervening variables was tested only after first taking antecedent post-FLEP financial outcomes into account.

Section 7.3 would tackle the effects of the study's multiple factors that were expected to affect students' financial outcomes after the FLEP. For each FLEP group, regression models were created for each post-FLEP financial outcome— **financial objective knowledge, financial subjective knowledge, financial belief, financial self-efficacy and welfare-enhancing financial behaviors**—by using a hierarchical method. This method followed the current study's conceptual framework flow of how financial outcomes were conceived to precede from one to another in a certain order in time.

The FLEP impacts financial knowledge which in turn impacts financial belief which impacts financial self-efficacy which then impacts financial behavior. This meant that the stepwise addition of predictors first considered antecedent financial outcomes—applicable for post-FLEP outcomes after financial knowledge—before taking intervening variables into account. Antecedent post-FLEP financial outcomes are summarized in Table 7.16.

Table 7.16

List of Antecedent Financial Outcome Variables

Post-FLEP Financial Outcome	**Antecedent Financial Outcome Variables**
Financial knowledge (objective)	post-FLEP financial subjective knowledge
Financial knowledge (subjective)	baseline financial subjective knowledge
Financial belief	baseline financial belief post-FLEP subjective knowledge
Financial self-efficacy	baseline financial self-efficacy post-FLEP financial belief post-FLEP subjective knowledge
Financial behavior	baseline financial behavior post-FLEP financial self-efficacy post-FLEP financial belief post-FLEP subjective knowledge

Intervening variables likely modified the effect of the FLEP on the students' post-test financial outcomes. If the number of students had been larger and actual random assignments to each of the FLEP groups done, it would have sufficed to assume that the intervening variables' effect on the students' financial outcome measures would have cancelled out. But since it was not practical to keep all the known intervening variables constant by experimental design, one solution was to statistically control for them. The intervening variables considered in this study were tested as additional predictors in a multivariate statistical technique to determine their contribution to the variability of the post FLEP financial outcome, after accounting for the effect of the independent variable (extent of FLEP participation), the pre FLEP financial measure levels and the relevant

antecedent outcome variables. The intervening variables considered in this study are listed in Table 7.17. These variables are sorted by categories and the composition of each category is listed.

Table 7.17

List of Intervening Variables

Intervening Variable Category	**Composition of Each Category**
Parental influence (3 separate scales) (Data from Section 5.4.1)	Direct teaching (mean of 5-item scale) Parent reinforcement (mean of3-item scale) Perceived financial behavior of parents (mean of 7-item scale)
Peer influence (5 separate items) (Data from Section 5.4.2)	Perceived peer money management (5-point option) Perceived peer spending (5-point option) Peer membership in clubs and associations (3-point option) Peers had jobs outside the house (5-point option) Peers' educational plan (5-point option)
Students' access to financial resources (7 separate items) (Data from Section 5.4.4)	Savings account (yes, none) Savings at home (yes, none) Plain allowance (yes, none) Allowance for chores (yes, none) Borrowings (yes, none) Wage from odd jobs (yes, none) Salary for employment (yes, none)
Having jobs outside the house (Data from Section 5.4.3)	Odd jobs (yes, none) Employment (yes, none)
Other sources of financial literacy (Data from Section 5.4.5)	FLE courses outside the school (yes, no) Internet/books (yes, no)

7.3.1 Creation of Regression Models Predicting Each Financial Outcome

The regression models were created for each post-FLEP financial outcome following the hierarchical approach. The addition of the predictors followed the order of precedence based on the study's conceptual framework. Addition of precursor financial outcome variables followed the order of time. Addition of intervening variables followed the order of what was considered to be the most influential to the least (Danes, 1994; McCormick, 2009; Shim, Xiao et al., 2009).

In the case of financial subjective knowledge outcome, the first predictor added was the pretest financial subjective knowledge level which in earlier statistical tests had to be accounted for to get a more precise measure of FLEP participation's effect. Then the FLEP participation score was added as the independent variable. After these, intervening factors were added in the sequence

starting from what was believed to have the strongest influence to the weakest. Thus, parental influence was added next, then peer influence, access to money, having a job outside the house and finally other sources of financial literacy. The financial outcome models for financial knowledge were created with the predictors that are summarized in the following relationship equation:

- Objective financial knowledge = *f* (post-FLEP financial subjective knowledge, parent influence, peer influence, access to money, having a job outside the home, other FLE sources)
- Post-FLEP financial subjective knowledge = *f* (baseline financial subjective knowledge, parent influence, peer influence, access to money, having a job outside the home, other FLE sources)

Following the conceptual framework of the study, regression models reflected the effect of antecedent financial outcome variables. Thus, the predictors for post-FLEP financial belief first considered the effect of pre-FLEP or baseline financial belief then its antecedent outcome variable, post-FLEP financial subjective knowledge, and then FLEP participation score. After that, the intervening variables were tested according to the theoretical sequence, one category at a time while each component of the category was added stepwise. The creation of the models for post-FLEP financial self-efficacy and behaviors also included all the antecedent predictors as shown in the following relationship equations.

- Post-FLEP financial belief = *f* (baseline financial belief, post-FLEP subjective knowledge, parent influence in saving, access to money, peer influence, having a job outside the home, other FLE sources)
- Post-FLEP financial self-efficacy = *f* (baseline financial self-efficacy, post-FLEP financial belief, post-FLEP subjective knowledge, parent influence, peer influence, access to money, having a job outside the home, other FLE sources)

- Post-FLEP financial behavior = *f* (baseline financial behavior, post-FLEP financial self-efficacy, post-FLEP financial belief, post-FLEP subjective knowledge, parent influence, peer influence, access to money, having a job outside the home, other FLE sources)

Each regression model was built with predictors that were significantly correlated with the dependent variables and also when these predictors were added stepwise, the change in *F* statistic of the resulting model remained statistically significant. The unique contributions of predictor variables to the variation of their respective financial outcomes were indicated by their semipartial correlation coefficient, sr^2.

Note that regressions in this study only considered the predictor variables' main effects. No attempt was made to detect and identify effects of interaction terms.

7.3.1.1 Regressions for Objective financial knowledge (Financial Quiz)

In building the regression models for predicting financial quiz scores, posttest financial knowledge was added as one of the predictors to determine how much of the students' quiz scores were accounted for by level of subjective knowledge and skills accumulated after the FLEP. And although earlier statistical tests revealed that FLEP participation score had a significant correlation only to Three Module's subjective financial knowledge, the variable was retained in the final models for the other two FLEP groups. This was done to detect any effect on the variation of the dependent variable, even if it were very weak and not significant. Table 7.18 shows the results of the regressions.

As can be seen in Table 7.18, posttest financial knowledge only contributed significantly to Two Module's three-predictor model, $R^2 = .37$, $F(3, 49) = 9.73$, $p < .001$. Its contribution to this model was 22% which means that it accounted for that portion of the financial quiz score. The posttest financial knowledge had a significant positive regression weight ($B = 0.27$), indicating that students who posted higher posttest financial subjective knowledge tended to show higher financial quiz

scores, after controlling for the other variables in the model. Performance tests were found to correlate with levels of subjective knowledge and had each their own predictive value, according to a review of studies by Hung, Parker & Yoong (2009). Based on a research by Huston (2010), testing well or high performance scores did not necessarily lead to wise financial decisions in which practical knowhow seemed to prevail.

Table 7.18

Results of Hierarchical Multiple Regressions for Each FLEP Group Predicting Financial Quiz Scores

Predictor Variables	Two Module			Two + Module			Three Module		
	B	β	sr^2	*B*	β	sr^2	*B*	β	sr^2
(Constant)	-0.80			4.88			1.85		
	(1.21)			(0.19)			(1.36)		
Posttest financial knowledge	0.27	.48***	.222	—	—	—	—	—	—
	(0.06)								
FLEP participation score	—	—	—	—	—	—	0.18	.40***	.151
							(0.05)		
Peer club membership	0.60	.25*	.060	—	—	—	—	—	—
	(0.28)								
Peers' educational plan	0.32	.24*	.055	—	—	—	—	—	—
	(0.16)								
Allowance for chores	—	—	—	0.64	.21*	.043	-1.13	-.29**	.082
				(0.27)			(0.40)		
Borrowed money	—	—	—	—	—	—	-1.82	-.43***	.182
							(0.43)		
Model	1			2			3		
R	.61			.21			.63		
R^2	.37***			.043*			.39***		
F	9.73 [3, 49]			5.51 [1, 123]			12.91 [3, 61]		
No. of Observations	53			125			64		

Note: sr^2 = semipartial correlation coefficient. Data for financial outcomes per group were discussed and derived from Section 5.3; FLEP scores per group from Section 5.2; and intervening variables from Section 5.4.
*p < .05. **p < .01. ***p < .001.

Peer influence significantly contributed to the Two Module's model: 6% from peer club membership and 6% from peers' educational plan. The significant positive regression coefficient (*B* = 0.60) for peer club membership indicated that students who reported a greater proportion of their friends having club memberships tended to get higher financial quiz scores, after controlling for the other predictors. Learning from peers appeared to be implied as noted in other studies (Gutter, Eisen & Way, 2009). Similarly, a significant positive regression coefficient for peers' educational plan meant that the higher the level of schooling the student's peer desired, the higher the financial score was.

As a proxy for socio-economic class, this variable's positive association to financial quiz score suggested that the higher the socio-economic class was, the higher their financial quiz scores were.

The Two+ Module was a one-predictor regression model R^2 = .043, F(1, 123) = 5.51, p < .001. But the sole predictor, "allowance for chores," only accounted for 4.3% of the financial quiz score. The significant positive regression coefficient (B= .64) of this variable (coded as 1= got allowance for chores and 0=did not) indicated that students who got this type of allowance tended to have higher financial quiz scores that those that did not. Although getting an allowance at this age had mixed association with financial knowledge (Doss, Marlowe & Godwin, 1995), for this group at least, access to this kind of allowance had a moderate to strong correlation with the financial quiz.

Participation in the FLEP showed a significant contribution only to Three Module's three-predictor model, R^2 = .39, F(3, 61) = 12.91, p < .001. It can be recalled that the restricted range of this variable did not allow detection of correlations with financial outcomes for Two Module and Two+ Module groups. In Three Module's regression model for predicting financial quiz, FLEP score's unique contribution to the model was 15%. The FLEP participation score had a significant positive regression weight (B = 0.18), indicating that students who reported higher participation scores tended to show higher financial quiz scores, after controlling for the other variables in the model.

The other two predictors of Three Module's regression and their contribution to the model had to do with access to money. These were "allowance for chores" with a contribution of 8% and "borrowed money" at 18%. Students in Three Module who received an allowance for chores (coded as 1= got this allowance type and 0=did not) were negatively correlated with financial quiz scores. This indicated that those who got an allowance for chores were more likely to show lower financial quiz scores than those who did not, after controlling for the other variables in the model. This was an opposite relation to the one seen in Two Module. Similarly, those who borrowed money (coded as 1=

borrowed money and 0=did not) had lower financial quiz scores than those who did not. It was not asked whether students who borrowed money paid it back.

In summary, the results of regression found that the FLEP version in Three Module accounted for 15% of the variance in the financial quiz scores with all the other predictors controlled. As one of the antecedent variables, posttest financial knowledge had a moderate positive effect on Two Module's financial quiz scores, but did not significantly affect the other groups' financial quiz scores. As an intervening variable, peer club memberships as a proxy to social capital input, had a small positive effect on Two Module's financial quiz which meant that the more the students' peers had club membership, the more social capital input they have and the higher their financial scores were. In addition, the more this group's students had peers with higher educational plans, which was considered a proxy to socioeconomic class, the higher their financial quiz scores were. The effects of getting an allowance for chores on the financial quiz were mixed. There was a small positive effect on Two+ Module's scores but a small negative effect on Three Module's scores. Students in Three Module who borrowed money were likely to have lower financial quiz scores than those who did not.

7.3.1.2 Regressions for Subjective Financial Knowledge

The regressions for post-FLEP subjective financial knowledge also included FLEP participation score for all of the FLEP groups even if earlier statistical tests did not generate significant correlations with financial outcomes for Two Module and Two+ Module groups. This was to determine its effect on the variation of the dependent variable, though it could be very weak and not significant. The results of the regressions are shown in Table 7.19.

In the summary table, each of the baseline levels of financial subjective knowledge positively and significantly correlated with the post-FLEP financial knowledge outcome, as indicated by its positive regression coefficient for each model. This suggested that those with higher financial knowledge before the FLEP tended to show bigger improvements in this outcome. The rate of

increase in the outcome per unit increase in this variable was marked by the significant positive regression coefficients, 0.54 for Two Module, 0.32 for Two+ Module and 0.47 for Three Module. The unique contribution of the pretest financial knowledge to their respective models differed across the three FLEP groups, 33% for Three Module, 27% for Two Module and 9% for Two+ Module.

Table 7.19

Results of Hierarchical Multiple Regressions for Each FLEP Group Predicting Subjective Financial Knowledge Outcome

Predictor Variables	Two Module			Two + Module			Three Module		
	B	β	sr^2	*B*	β	sr^2	*B*	β	sr^2
(Constant)	7.95			9.13			3.60		
	(3.15)			(2.58)			(2.06)		
Pretest financial	0.54	.53***	.274	0.32	.32***	.092	0.47	.57***	.320
knowledge	(0.12)			(0.08)			(0.07)		
FLEP participation score	0.01	.00	.000	0.02	.01	.000	0.28	.41***	.167
	(0.22)			(0.13)			(0.06)		
Parent teaching	—	—	—	0.12	.23*	.041	—	—	—
				(0.05)					
Peers with jobs	0.90	.25*	.058	—	—	—	—	—	—
	(0.42)								
Plain allowance	—	—	—	—	—	—	-1.82	-.23*	.051
							(0.73)		
Had odd jobs	—	—	—	1.18	.18*	.030	—	—	—
				(0.54)					
Model	1			2			3		
R	.61			.51			.71		
R^2	.37***			.26***			.51***		
F	9.64 [3, 49]			10.67 [4, 120]			20.84 [3, 61]		
No. of Observations	53			125			65		

Note: sr^2 = semipartial correlation coefficient. Data for financial outcomes per group were discussed and derived from Section 5.3; FLEP scores per group from Section 5.2; and intervening variables from Section 5.4.
*p < .05. **p < .01. ***p < .001.

The only model in which the FLEP participation score had a unique contribution to the model was in Three Module. It accounted for 17% of three-predictor regression model R^2 = .51, $F(3, 61)$ = 20.84, p < .001. The FLEP participation score had a significant positive regression weight (B = 0.47), indicating that students who reported higher participation scores tended to show a bigger increase in financial knowledge, after controlling for the other variables in the model. The other two predictors and their unique contributions to the model were pretest financial knowledge, 32% and plain allowance, 5%. Receiving plain allowance (coded as 1= get plain allowance and 0=did not) was

negatively correlated with financial knowledge outcome. This indicated that those who did not get plain allowance were more likely to show bigger improvements in financial knowledge than those who did, after controlling for the other variables in the model.

The three-predictor regression model for Two Module, $R^2 = .37$, $F(3, 49) = 9.64$, $p < .001$, was accounted for by the unique contributions of 27% from pretest financial knowledge, and 6% from peers with jobs and none from FLEP participation score. The significant and positive regression coefficient ($B = 0.90$) for "peers with jobs" indicated that students who had a bigger proportion of peers with jobs tended to report a higher post-FLEP financial knowledge level, after accounting for the other predictors.

The three-predictor regression model for Two+ Module, $R^2 = .26$, $F(4, 120) = 10.67$, $p < .001$, was accounted for by the following unique contributions: 9% pretest financial knowledge, 4% parent teaching, and 3% who had odd jobs, and no contribution from FLEP participation score. The significant positive regression coefficient ($B = 0.12$) for parental teaching indicated that students who reported more frequent parent financial instruction tended to report higher levels of post-FLEP financial knowledge, after accounting for the other predictors. Having odd jobs (coded as 1= had odd jobs and 0=did not) had a significant positive regression weight ($B = 1.18$), indicating that students with odd jobs were more likely to report higher levels of financial knowledge than those who do not, after controlling for the other predictors.

In summary, results of the regression analysis showed that the Three Module version of the FLEP accounted for 15% of the improvement in financial knowledge. The higher the FLEP scores were, the greater the increase in financial knowledge, after taking the other predictors into account. All of the groups' variations in post-FLEP financial knowledge were positively affected by the students' baseline knowledge, a fact earlier shown through ANCOVA.

As an intervening variable, parent teaching had a small (4%) positive effect on Two Module's posttest financial knowledge but did not show in the regressions of the other groups. Students who had more peers with jobs tended to have higher posttest knowledge, based on Two Module's model. Two+ Module's students who had odd jobs were likely to post higher posttest knowledge. But Two Module's students who receive plain allowance tended to have lower posttest knowledge than those who did not receive this type of allowance.

7.3.1.3 Regressions for Financial Belief

Regression models for post-FLEP financial belief consisted of predictors that significantly contributed to its variability. Thus, where FLEP participation proved not significant in accounting for the model, it was dropped. These models also tested the effect of the antecedent outcome variable, posttest financial knowledge on posttest financial belief. This was to test the theory that a change in financial knowledge could lead to a change in belief.

The summary results in Table 7.20 show that for all of the FLEP groups' regression models, baseline levels of financial belief and posttest financial subjective knowledge were positively and significantly correlated with post-FLEP financial belief outcome. This was indicated by the positive regression coefficients for these predictors in the models. This suggested that students with more positive financial belief before the FLEP and higher levels of financial knowledge after the FLEP were more likely to show bigger improvements in the post-FLEP financial belief outcome.

The unique contribution of the pretest financial belief to their respective models varied across the three FLEP groups: 34% for Three Module, 30% for Two Module and 23% for Two+ Module. The rate of increase in the dependent variable per unit increase in this pretest financial belief (slope of the posttest on the pretest) was denoted by the significant positive regression coefficients: 0.36 for Two Module, 0.37 for Two+ Module and 0.48 for Three Module.

Table 7.20

Results of Hierarchical Multiple Regressions for Each FLEP Group Predicting Financial Belief Outcome

Predictor Variables	Two Module			Two + Module			Three Module		
	B	β	sr^2	*B*	β	sr^2	*B*	β	sr^2
(Constant)	7.75			9.95			-0.89		
	(1.84)			(1.27)			(1.95)		
Pretest financial belief	0.36	.54***	.279	0.37	.53***	.230	0.48	.63***	.338
	(0.07)			(0.05)			(0.05)		
Posttest financial knowledge	0.42	.42***	.173	0.16	.16*	.021	0.21	.17*	.021
	(0.10)			(0.07)			(0.09)		
FLEP participation score	—	—	—	—	—	—	0.27	.31***	.078
							(0.06)		
Parent teaching	—	—	—	0.06	.12	.007	—	—	—
				(0.05)					
Parent reinforcing	—	—	—	0.23	.21*	.027	—	—	—
				(0.09)					
Peers' expense management	—	—	—	—	—	—	0.62	.18**	.029
							(0.23)		
Savings account	—	—	—	-1.13	-.17*	.025	—	—	—
				(0.46)					
Savings at home	—	—	—	—	—	—	1.70	.15*	.020
							(0.73)		
Wages from odd jobs	—	—	—	—	—	—	-1.30	-.17*	.027
							(0.50)		
Model		1			2			3	
R		.74			.71			.89	
R^2		.55***			.50***			.79***	
F		31.06 [2, 50]			23.93 [5, 119]			34.05 [6, 56]	
No. of Observations		53			125			63	

Note: sr^2 = semipartial correlation coefficient. Data for financial outcomes per group were discussed and derived from Section 5.3; FLEP scores per group from Section 5.2; and intervening variables from Section 5.4.
*p < .05. **p < .01. ***p < .001.

The unique contribution of the posttest financial knowledge to their respective models was 17% for Two Module and 2% both for Three Module and Two+ Module. The rate of increase in the outcome per unit increase in this posttest financial knowledge was seen by the significant positive regression coefficients, 0.42 for Two Module, 0.16 for Two+ Module and 0.21 for Three Module.

The two-predictor regression model for Two Module, R^2 = .55, $F(2, 50) = 31.06$, $p < .001$, was accounted for by baseline levels of financial beliefs and posttest financial subjective knowledge. Their unique contributions were discussed above.

The FLEP participation score had a unique contribution only in Three Module's six-predictor regression model, R^2 = .79, $F(6, 56) = 34.05$, $p < .001$. It accounted for 8% of the regression model.

The FLEP participation score had a significant positive regression weight (*B* = 0.27), indicating that students who reported higher participation scores tended to have more positive post-FLEP financial belief, after controlling for the other predictors in the model.

In addition to Three Module's baseline levels of financial beliefs and posttest financial subjective knowledge, the other predictors (intervening variables) and their unique contributions to the model were 3% from peers' expense management, 2% savings at home, and 3% wages from odd jobs. The significant and positive regression coefficient for perceived peer money management (B = 0.62) suggested that students who more frequently observed their peers manage their expenses and avoid overspending tended to also post more positive financial belief levels. The significant and positive regression coefficient for savings at home (*B* = 1.70) indicated that students who had savings at home (coded as 1= had savings at home and 0=did not) are more likely to have more positive financial belief than those that did not have this. The predictor, "wages from odd jobs" (coded as 1= got wages from odd jobs and 0=did not) was negatively correlated with financial belief outcome. This meant that students who did not earn wages from odd jobs tended to report higher levels of positive financial belief than those who did, after controlling for the other variables in the model. In other words, getting wages from odd jobs had a negative effect on financial belief outcome.

The five-predictor regression model for Two+ Module, $R^2 = .50$, $F(5, 119) = 23.93$, $p < .001$, was accounted for by three other predictors (intervening variables) besides baseline levels of financial beliefs and posttest financial subjective knowledge. These other predictors and their unique contributions to the model were 1% parent teaching, 3% parent reinforcing, and 3% having a savings account. With the addition of parent reinforcement to the regression model, parent teaching's direct contribution to financial belief outcome diminished and was not significant for the full model. The positive and significant regression coefficient for parent reinforcement (*B* = 0.23) indicated that students who reported more frequent parent reinforcement in financial matters tended to have

more positive financial belief levels. However, the negative and significant regression coefficient for savings account (*B* = -1.13) indicated students who reported that they had a savings account (coded as 1= had savings account and 0=did not) were more likely to have less positive financial belief levels.

In summary, the results of regression found that the FLEP version in Three Module accounted for 8% of the post-FLEP financial belief. In all of the groups' regression models for posttest financial belief, students' baseline levels financial belief and posttest financial knowledge were demonstrated to positively and significantly affect the improvement of financial belief.

Of the intervening variables, parental reinforcement had a 3% significant contribution to Two+ Module's model explaining the change of post-FLEP financial belief. It could be noted that if parent reinforcement was absent in the regression, the effect of parent teaching was positive and significant, accounting for 3% of change in the financial belief. Three Module's post-FLEP financial belief was positively influenced by "peers' expense management" which indicated that students who had observed more of their peer's manage expenses and avoid overspending, the more positive their financial belief levels were. Based on the regression for Three Module, students' post-FLEP financial belief was influenced positively by having savings at home but negatively by getting wages from odd jobs.

7.3.1.4 Regressions for Financial Self-efficacy

The creation of regression models for post-FLEP financial self-efficacy included the antecedent outcome variables, post-FLEP financial belief and post-FLEP financial knowledge. Only the predictor that contributed significantly to the model was retained. This was to test the theory that a change in financial knowledge and belief could lead to a change in self-efficacy. The results of the regressions are shown in Table 7.21.

For all of the FLEP groups' regression models, baseline levels of financial self-efficacy and posttest financial belief positively and significantly affected the financial self-efficacy outcome. This

was indicated by the positive regression coefficients for these predictors in the models. This observation suggested that students with higher levels of financial self-efficacy before the FLEP and those with more positive financial belief after the FLEP tended to post higher levels in the post-FLEP financial self-efficacy outcome. The unique contribution of the pretest financial self-efficacy to their respective models varied across the three FLEP groups, 40% for Two Module, 22% for Three Module and 21% for Two+ Module. The unique contribution of the posttest financial belief to their respective models was 5% for Two Module at and 10% for Three Module and 2% for Two+ Module.

Table 7.21

Results of Hierarchical Multiple Regressions for Each FLEP Group Predicting Financial Self-efficacy Outcome

Predictor Variables	Two Module			Two + Module			Three Module		
	B	β	sr^2	*B*	β	sr^2	*B*	β	sr^2
(Constant)	1.20			7.32			-0.57		
	2.46			2.00			1.35		
Pretest financial self-	0.60	.69***	.403	0.44	.53***	.214	0.49	.58***	.215
efficacy	0.07			0.05			0.05		
Posttest financial belief	0.35	.24**	.046	0.21	.15*	.015	0.48	.40***	.102
	0.12			0.10			0.07		
Parent teaching	—	—	—	0.21	.27***	.053	—	—	—
				0.05					
Peers' educational plan	—	—	—	-0.85	-.21***	.043	—	—	—
				0.24					
Savings at home	—	—	—	—	—	—	1.57	.11*	.011
							0.73		
Wages from odd jobs	1.68	.17*	.028	—	—	—	—	—	—
	0.77								
Model	1			2			3		
R	.85			.78			.93		
R^2	.72***			.61***			.86***		
F	42.26 [3, 49]			45.60 [4, 119]			119.89 [3, 60]		
No. of Observations	53			124			64		

Note: sr^2 = semipartial correlation coefficient. Data for financial outcomes per group were discussed and derived from Section 5.3; FLEP scores per group from Section 5.2; and intervening variables from Section 5.4.
*p < .05. **p < .01. ***p < .001.

The three-predictor regression model for Two Module, R^2 = .72, $F(3, 49) = 42.26$, $p < .001$, was accounted for by baseline levels of financial self-efficacy, posttest financial belief and wages from odd jobs. The first two predictors were discussed above. The third predictor (coded as 1= got wages from odd jobs and 0 = did not) showed a unique contribution to the model of 3% and its

positive regression coefficient (*B* = 1.68) meaning that it positively influenced the financial self-efficacy outcome. This suggested that students who earned wages from odd jobs tended to report higher levels of post-FLEP financial self-efficacy than those who did not, after controlling for the other variables in the model.

The regression for Two+ Module data produced a four-predictor model, R^2 = .61, $F(9, 119)$ = 45.60, $p < .001$. Aside from baseline levels of financial self-efficacy and posttest financial belief which were discussed earlier, the two other predictors accounting for the model were parent teaching and peers' educational plan. The unique contributions to the model were 5% from parent teaching and 4% from peers' educational plan. Parent teaching (*B* = .21) had a significant positive effect on post-FLEP financial self-efficacy, whereas peers' educational plan (*B* = -.85) had a significant negative effect.

The three-predictor regression model for Three Module, R^2 = .86, $F(3, 60)$ = 119.89, $p < .001$, was accounted for by baseline levels of financial self-efficacy, posttest financial belief and savings at home. The last predictor (coded as 1= had savings at home and 0=did not) had a unique contribution of 1%. Its positive regression coefficient (*B* = 1.57) indicated that students who reported that they had savings at home tended to post higher levels of post-FLEP financial self-efficacy.

In summary, no regression results found a main effect of FLEP participation score on the variance in the posttest financial self-efficacy with all the other predictors taken into account. As an antecedent variable, post-FLEP financial belief was demonstrated to enhance financial self-efficacy levels in all three FLEP groups. Pre-FLEP financial self-efficacy also positively influenced post-FLEP financial self-efficacy levels. Of the intervening variables, parental teaching had a significant positive effect on Two+ Module's post-FLEP financial self-efficacy, contributing 5% to its variance. Peers' educational plan, which was proxy to the students' socio-economic status, had a negative relationship to the variations of Two+ Module's post-FLEP financial self-efficacy. Getting wages from

odd jobs had a positive relationship to Two Module's post-FLEP financial self-efficacy outcome. Having savings at home had a positive influence on Three Module's post-FLEP financial self-efficacy outcome.

7.3.1.5 Regressions for Financial Behaviors

The creation of the regression models for post-FLEP financial behavior considered the effects of the antecedent financial outcomes, posttest financial self-efficacy, belief and knowledge. The posttest financial self-efficacy was retained in the final models even if very weak and not significant effects to the financial behavior were detected. This was to test the theory that a change in financial self-efficacy could lead to a change in behavior. Other antecedent financial outcomes were retained only if significant.

Table 7.22

Results of Hierarchical Multiple Regressions for Each FLEP Group Predicting Financial Behavior Outcome

Predictor Variables	Two Module			Two + Module			Three Module		
	B	β	sr^2	*B*	β	sr^2	*B*	β	sr^2
(Constant)	0.99			3.04			-2.41		
	(3.01)			(1.95)			(2.62)		
Pretest financial behavior	0.83	.79***	.551	0.70	.65***	.303	0.75	.79***	.421
	(0.08)			(0.06)			(0.07)		
Posttest financial self-efficacy	0.03	.02	.000	0.27	.18**	.020	0.10	.07	.003
	(0.13)			(0.09)			(0.10)		
Posttest financial knowledge	0.47	.20*	.032	—	—	—	—	—	—
	(0.18)								
FLEP participation score	—	—	—	—	—	—	0.26	.17**	.024
							0.10		
Parent teaching	—	—	—	0.16	.14*	.014	—	—	—
				(0.07)					
Peer's educational plan	-0.98	-.18*	.029	-0.95	-.16*	.023	—	—	—
	(0.40)			(0.30)					
Model	1			2			3		
R	.88			.85			.90		
R^2	.77***			.72***			.80***		
F	39.59 [4, 48]			78.01 [4, 119]			82.51 [3, 61]		
No. of Observations	53			124			65		

Note: sr^2 = semipartial correlation coefficient. Data for financial outcomes per group were discussed and derived from Section 5.3; FLEP scores per group from Section 5.2; and intervening variables from Section 5.4.
*p < .05. **p < .01. ***p < .001.

As can be seen in Table 7.22, all of the FLEP groups' regression models were accounted for by baseline financial behavior levels with unique contributions to their respective models: 55% for Two Module, 30% for Two+ Module and 42% for Three Module. This indicated that the higher the baseline financial behavior levels, the higher the post-FLEP financial behavior levels were, with the other predictors controlled. The rate of increase in the outcome per unit increase in this variable was denoted by the significant positive regression coefficients, 0.83 for Two Module, 0.70 for Two+ Module and 0.75 for Three Module.

The unique contributions of posttest financial self-efficacy to their respective FLEP models were examined. The only significant contribution of this variable, of around 2%, was detected for the Two+ Module's three-predictor model, $R^2 = .72$, $F(4, 119) = 78.01$, $p < .001$. The variable's significant positive regression weight ($B = 0.27$) indicated that the higher the students' post-FLEP financial self-efficacy levels were, the higher their reported post-FLEP financial behavior levels were, after controlling for the other variables in the model. For the other two FLEP groups, financial self-efficacy generated very weak and not significant contributions: none detected for Two Module and 0.3% for Three Module.

The third predictor for the Two+ Module's regression was parent teaching that had a small unique contribution of 1.4% to the model. Its positive regression weight ($B = 0.16$) implied that parent teaching had a positive effect on improvement in financial behavior. The next predictor was peers' educational plan which had a small unique contribution of 2.3% to the model. The predictor's significant negative regression weight ($B = -0.83$) suggested that the higher the level of their peer's schooling plans was, the lower their post-FLEP level in financial behavior was. It had a negative effect on the post-FLEP financial behavior levels. As a proxy to socioeconomic status, the influence of this predictor indicated that the higher the socio-economic class was, the lower their post-FLEP financial behavior levels were.

The FLEP participation score had a unique contribution only to the Three Module's three-predictor regression model R^2 = .80, $F(3, 61) = 80.51$, $p < .001$, accounting for 3% of the variance of the posttest. The FLEP participation score had a significant positive regression weight (B = 0.47), indicating that the higher the students' participation scores were, the higher their reported levels for post-FLEP financial behavior were, after controlling for pretest financial behavior and posttest financial self-efficacy. The other two predictors in this model were pretest financial behavior and posttest financial self-efficacy which have been discussed above.

The four-predictor model for Two Module, R^2 = .76, $F(4, 48) = 38.04$, $p < .001$ had another antecedent financial outcome that accounted for 3.2% of the variation of posttest financial behavior. This was posttest financial knowledge which had positively influenced post-FLEP financial behavior levels. The regression's intervening variable, peers' educational plan, had a unique contribution of about 3% to the model. This predictor's negative regression weight (B = -0.98) suggested that just like in Two+ Module's model, students with peers who had higher educational plans tended to report lower post-FLEP financial behavior levels, after controlling for the other variables in the model.

As a general note, it was necessary to check if the predictors were collinear with each other. Multicollinearity would indicate that such predictors were measuring the same thing and thus one of them is usually dropped from the regression or combined to form a single variable. Results from the multicollinearity tests revealed that none of the intervening variables were multicollinear with the covariates or any other predictor. Hence, no predictor was dropped from any of the regressions for this reason. No two predictors measured the same thing.

In summary, the regression results found that the FLEP version in Three Module accounted for 2% of the variance in the posttest financial behavior with all the other predictors taken into account. For all groups, baseline levels in financial self-efficacy had positively influenced post-FLEP financial behavior levels, as it had done in tests with ANCOVA. As an antecedent variable, post-FLEP

financial self-efficacy was demonstrated to significantly enhance financial behavior levels only in Two+ Module, but was very weak and not significant for the other two regression models. The other antecedent predictor shown to have significantly improved Two Module's financial behavior was posttest financial knowledge. The intervening variable, peers' educational plan, which was considered a proxy to the students' socioeconomic status, had negative relationship to the variation of post-FLEP financial behavior for Two Module and Two+ Module groups.

7.3.2 Flow of Impact from FLEP Participation to a Series of Financial Outcomes

The series of regression analyses provided a way to account for the flow of impact from participation in the FLEP to the change in financial behavior. This is summarized in Figure 5.1. Results of the multivariate analyses showed that the Three Module version of the FLEP had positively and significantly influenced the results of the financial quiz, post-FLEP levels of financial knowledge; financial belief and financial behavior, after taking into account the respective student's baseline levels and intervening variables. FLEP participation was found to account for15% of the variation in financial quiz score, 17% of the post-FLEP financial subjective knowledge, 8% of the post-FLEP financial belief, and 2% of the post-FLEP financial behavior.

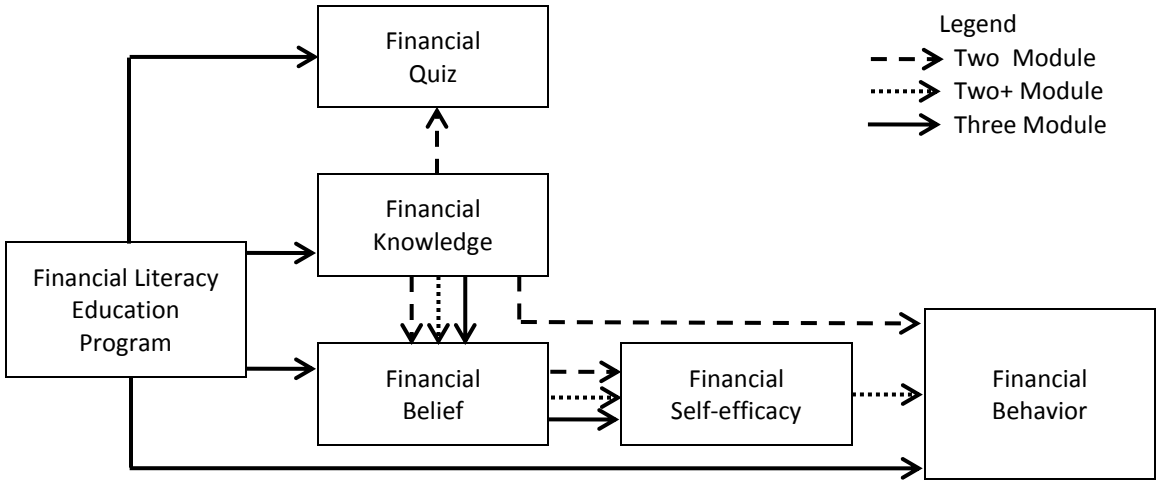

Figure 7.1 Diagram Depicting the Impact of Participation in the Financial Literacy Education Program

The effect of FLEP participation was not detected on the post-FLEP financial outcome measures for students in the Two Module and Two+ Module groups due to the limitation of the survey instrument. However, the effects of the FLEP in these two groups were established by the significant improvements in financial outcomes based on level differences before and after the FLEP. Students and the parents' perceptions of the outcomes that the FLEP has achieved confirm this. The other indication of the FLEP's positive effect stems from the fact that the gradient (or slope) of the level of improvement in financial knowledge on the baseline level was comparative to that of Three Module, based on ANCOVA results. If FLEP did not have an effect on the outcomes of the other groups, the slopes of their lines (change in posttest on the pretest) would have been flat or almost flat, which was like saying that after participation in the FLEP, knowledge levels did not change from its baseline level.

The influence of the financial knowledge gain to enhancing financial belief levels had been established by the regressions for all three FLEP groups. Similarly, the effect of enhancing financial belief to increase financial self-efficacy levels was shown by the regressions for all three FLEP groups. It was only in Two+ Module's regression analysis that a significant positive relation of a stronger financial self-efficacy to financial behavior was detected, although there appeared to be very weak and not significant relationships for the models in Two Module and Three Module.

These findings add to the literature that focuses on conceptual frameworks depicting pathways of impact derived from participation in financial education programs. There were direct effects on the financial outcomes and there were mediated effects. An effective FLEP increases knowledge which in turn builds up a more positive financial belief. These two financial outcomes enhance financial self-efficacy which in turn influences improvement in financial behavior.

The conceptual framework also explains why the direct effects of FLEP decrease from knowledge to belief, self-efficacy and behavior. Behavioral change needs time and effort because

students may not only lack knowledge but also have to overcome biases and lack self-control (Huston 2010). Students' comments about their learning outcomes were positive in conveying what they gained financial knowledge and belief. However, more students expressed how difficult it is for them to resist temptations to impulse buy or find it hard to set aside money. These are indicators of a weak perception of self-efficacy, poor savings habit and lack of discipline. Self-efficacy has to be strengthened to facilitate change in behavior, as Bandura (2004) postulated.

7.3.3 Effects of Intervening Variables

Based on Three Module's regression models, some of the intervening variables considered in this study had enough power to modify the effect of the FLEP on the students' financial outcomes. Some enhanced the effect of the FLEP and others hindered it. Only the main effects of intervening variables were examined. In the discussion below, the intervening variables that made significant contributions to financial outcome are presented by categories.

7.3.3.1 Parental influence

Parental influence variables contributed significantly to regression models for Two+ Module just as each of its dimensions did show significant correlations with all of the baseline financial measures (Table 5.37). After controlling for their respective baseline financial outcomes, parental teaching showed a significant 4% contribution in the model predicting post-FLEP financial subjective financial knowledge; a 5% to post-FLEP financial self-efficacy model and 1.4% to post-FLEP financial behavior model. Parental reinforcement had a 3% significant contribution to the model explaining the level of post-FLEP financial belief. Thus the more parent teaching and reinforcement there is, the greater the improvement in financial knowledge, belief, self-efficacy and behavior would be.

7.3.3.2 Peer influence

The unique contributions of peer influence variables on students' post-FLEP financial outcomes ranged from 2% to 6% of their respective models. Some enhanced the variation of the

financial outcome and others suppressed it. Peers' educational plan provided significant contributions to many of the regression models. It had a 6% contribution and showed a positive relationship to Two Module's financial quiz score but had a 3% contribution though negative relationship to the variance of post-FLEP financial behavior. This predictor also had a 4% contribution and negative relationship to the variations of Two+ Module's post-FLEP financial self-efficacy and a 2% contribution and negative correlation to that of financial behavior. Since peers' educational plan was a proxy to the students' socioeconomic status, it means that the more ambitious the educational plan was, the higher the socioeconomic class was. The results seemed to suggest that the higher the student's socioeconomic class was, the higher their financial quiz score was but the lower their levels of financial self-efficacy and financial behavior were.

Peers with jobs had a 6% contribution and a positive relationship to Two Module's post-FLEP financial subjective knowledge. This indicated that for this group, the more of their friends had jobs, the greater their *influence on the students'* financial knowledge. Peers' expense management had a 3% contribution and positive relationship to Three Module's post-FLEP financial belief. This was true only for those students in this group who had observed their peer's manage their expenses and avoid overspending. This indicated that the more their friends do this, the more positive their financial belief was. Peer club membership had a 6% contribution and positive relationship to Two Module's post-FLEP financial quiz score. This suggested that the more the students' friends were members of a club(s), the greater social capital input they had in their financial objective knowledge and so had a higher score.

7.3.3.3 Students' access to financial resources

The effect of students' access to financial resources on their post-FLEP financial outcomes depends on the source of money. Getting allowance for chores had a positive relationship to Two+ Module's financial quiz score. However, it had negative relationship to Three Module's financial quiz

score. Receiving plain allowance had a negative relationship to Two Module's post-FLEP financial subjective knowledge outcome. Studies have shown that receiving an allowance was not associated to knowledge of what to do with money (Doss, Marlowe & Godwin, 1995; Mortimer, Dennehy, Lee & Finch, 1994).

Having savings at home showed a positive relationship to Three Module's post-FLEP financial belief and financial self-efficacy outcomes. But having a savings account had a negative relationship to Two Module's post-FLEP financial belief outcome. The students might have more control over the money saved at home than with the bank account. Getting wages from odd jobs had a positive relationship to Two Module's post-FLEP financial self-efficacy outcome but had a negative relationship to Two Module's post-FLEP financial belief outcome. Borrowed money had the biggest effect, accounting for 18% of Three Module's variance in the financial quiz, but the relationship was a negative one. Thus for this group, students who borrowed money tended to have lower quiz scores than those who did not.

The effects of access to money were mixed. The regressions did not detect any main effect of access to money on posttest financial behavior. But Pearson correlations showed a positive relationship between savings at home and post-FLEP behavior (Table 5.45).

7.3.3.4 Having jobs outside the house

The unique contribution of "had odd jobs" was detected as a positive relationship to Two+ Module's post-FLEP financial subjective knowledge and Two Module's post-FLEP financial subjective behavior. In both cases, it accounted for 3% of the respective models. This suggested that the groups' students who had odd jobs tended to have higher levels of financial subjective knowledge and better financial behaviors than those that did not, all other things being equal. It can be noted that there were more students who reported that they had jobs than got paid for jobs. It is possible to do jobs in exchange for something other than money.

7.3.3.5 Other sources of financial literacy

The contribution of other sources of financial literacy was not detected in any of the multiple regressions. Very few students reported that they had other sources of financial literacy outside of school. But the few of those who took FLE courses outside the school were associated with having more positive pre-FLEP financial belief, self-efficacy and behaviors (Table 5.49). Studies on the impact of financial literacy programs in 4-H clubs have shown improvement in financial knowledge, self-efficacy and behaviors (Danes, Huddleston-Casas & Boyce, 1999; Danes & Haberman, 2007).

8 DISCUSSION

The research is primarily an evaluation design, yet it has a compelling character. It examined to what extent the financial literacy education program (FLEP) implemented in a middle school in New England brought about changes in students' financial literacy level, financial attitudes and financial behaviors. Then, the results were affirmed and additional findings were revealed by the perceptions of the students and parents about the financial outcomes the financial literacy education program had achieved.

By definition, financial literacy encompasses financial knowledge to include the attitude and confidence in applying that financial knowledge. In other words, participation in an effective program should enable the student to function with the knowledge and skills he/she gained or make financial decisions that are for her/his best financial well-being. Effectiveness of the FLEP in this study was assessed by using financial outcomes scales comprising broad notions of whether there was an increase in financial knowledge, enhancement in financial attitudes and improvement in financial behaviors. It also examined the intervening effects of non-FLEP factors such as parental and peer influence and having money and a job on the observed changes in financial literacy.

8.1 General Conclusions

This study demonstrated that after one month, the FLEP as a whole was effective as it significantly increased participants' financial knowledge to a very large extent, enhanced their financial attitudes in a large degree and improved financial behaviors to a moderate effect size. The effects of three program variants were all found to be effective as well in enhancing financial outcomes.

Of the savings behavior, only an increase in saving plain allowance was not significant. Whereas, saving of money from chores, odd jobs and gifts improved significantly. These findings in

savings behavior coincided with the findings in Doss, Marlowe & Godwin (1995) that children save more of the money they earn and less of what is freely handed to them. Probably, plain allowance which often is referred to as spending money or pocket money, are provided by parents and expected to be spent on essentials like food for lunch or non-essentials such as entertainment.

In addition to the direct effects of FLEP participation on financial outcomes, the study confirmed a conceptual framework depicting the flow of impact from participation in the FLEP to the increase in financial knowledge which, in turn, built up more positive financial beliefs; from these beliefs came enhanced financial self-efficacy which, in turn, improved financial behavior. Further, portions of the financial outcome changes were significantly explained by non-FLEP factors (intervening variables) such as parental and peer influences and having access to money and jobs.

8.1.1 Significant Gains in Financial Outcomes and Pathway to Behavioral Change

Gain in financial knowledge

Implemented as co-curricular experiential activities incorporated in eighth grade classes of Math, Social Studies and Language Arts, the FLEP seemed to have brought about a relatively large increase in practical financial knowledge and skills. Constructed as a broad concept, financial knowledge comprised aspects of the program content. The three-module variant was estimated to explain 17% of the increase in financial knowledge of its students, taking into consideration their baseline knowledge and other non-FLEP factors. In comparison to the effect of the two-module variants, the financial knowledge of students in the Three Module group gained by 3% more.

Close to 90% of the student respondents reported financial knowledge and skill gains. This was in fact, confirmed by 45 of 47 parents who noted that their children increased in understanding of certain financial matters, concepts and their relationships. The nature of financial knowledge and skill gained could be gleaned from the learning outcomes described by the students and their parents. In the main category, Earning, one student commented “that money doesn’t grow on trees.”

Several students recalled that they learned about getting a job and what income is. As one parent confirmed, their child learned "how money is generated, not just handed out" to them. Further, there were students who deepened their grasp of the actual relationships between education, jobs and earnings. One student wrote, "What things you can buy depend on the job." Another one wrote, "In order to get a good job you need good education."

In the area of saving money, students remarked that they learned "how to save money," how much and what to save on." They also learned "how to save money in a bank" and "realized how savings added up over time." One student learned "how to make sure I have a positive bank account." Parents affirmed that their children understood the concept of saving and learned some ways to save money. Their children also learned about savings accounts and the concept of interest, and about setting financial goals. One parent noted that their child realized the connection of saving to curbing "mindless spending."

As regards spending wisely, one student figured out that, "Spending money should be based around necessities rather than luxury." As another student put it, [spending wisely] all depends on the "wants" and "needs." The distinction between needs and wants boiled down to "what is important to buy and what is not," the basis of which, as someone asserted was, "what is needed in life and what isn't." But it may not be as easy to some who found it helpful to know "how to resist temptations from people who try to make me buy." Parents revealed that their children learned "how to spend money the right way," that is, "to spend money on buying needs not wants" and knowing the difference.

Budgeting was one of the main learning outcome categories often mentioned along with increased awareness on the cost of living. As one student put it, "Life costs a lot of money." Not only is budgeting about "how to come up with a plan," said one student, but also "how to make my income last," said another. In practical terms, it required "how to adjust your life to how much

money you have" and "manage finances by making choices about [what] I do and don't need." Parents observed that as the "actual cost of living" dawned on their children, there arose "a greater understanding and appreciation of what it takes to run a household budget and make ends meet." Their children learned "how to make and work with a budget"; "about expenses, bills and payments" and about "keeping track of money and expenses" to ensure one sticks to the budget. Several students declared their appreciation of their parents' "hard work to earn money" for the family's needs, realizing all they had to pay and growing in understanding why they "can't buy me stuff."

The concept and actual application of budgeting is one complex learning outcome. As a flow concept, it requires an understanding of earned income, expenses and savings. Budgeting also requires making choices that help achieve and maintain quality of life goals and values with a sense of today and the future. There is no simple way of measuring it. Student statements give a glimpse of how they grasped this. One student looked to the future: "When I grow up I should not get anything I want until I pay the bills and other stuff." Another student reflected on the experience: "After seeing that it was hard to get everything needed [and pay all the bills] with just my monthly pay, I need more money after for extra things." A student distilled his/her learning outcome thus, "The Fair has given me a taste of financial reality." Budgeting or managing money was mentioned as one of the learning outcomes by about half of the students of the Three Module group compared to a third of the other groups. This observation suggests that offering the one year Budgeting and Checkbook Project may have been more effective in teaching about complex financial concepts than the two-hour Math Fair.

Enhancement in financial belief

The influence of the increased level of financial knowledge in enhancing financial belief levels had been demonstrated by the regressions for all three FLEP groups. Informed by an increase in knowledge, financial belief turned more positive.

Within the category of earning, students were more convinced about the importance of getting a good education "in order to get a good-paying job" which they found necessary "to survive in the real world." Parents affirmed that their children got to appreciate the importance of education as it relates to jobs and earning potential. They noted their children's recognition of the need for a good job to earn enough money to live the life they want to live.

In the area of saving, students' remarked about their belief in the importance of saving, saving more, and saving regularly. One student spelled out one reason for why it is important, "You should have money saved for times that you have problems that cost you money." After realizing that "You need money for everything" one student concluded, "So it's important to save." Another student suggested the "need to know what to do with it [money]." Parents confirmed their children's more positive belief in the importance and need to save money and saving for the future. In addition, parents noted that their children grasped the fact that to add to savings, they need to spend less.

Spending wisely as a category seemed to show indications of student changes in beliefs and values. One student asserted, "It's not good to spend on stuff you don't need." Another one stated that "bigger isn't always better." More emphatic still, one student remarked, "I don't need the fanciest car or phone, and it's better to just buy the cheaper ones." On a practical level, a student thought, "I need to be more careful and watch what I spend my money on." Parents indicated that their children now believe that "buying the newest, latest and greatest isn't as important." Another parent commented that there was a shift in attitude where "must haves" became "wants."

Budgeting was recognized to be "a valuable skill' and necessary for financial security. As one student wrote there is "the need to make a plan for your dollars (a budget) so you won't be broke." And for another student, "debt is not something you want to live with." What goes into a budget depends on choices, and "decisions can change your life," one student reflected. Some of the students emphasized that it's important to set priorities in order, meaning that, "Bills and rent come first, then

food and utilities, then entertainment like cable TV, internet, video games." Parents attested that their children's belief in the importance of budgeting money and staying on budget had improved. Their children saw the importance of paying bills on time. A couple of parents felt assured that the school had reinforced fiscal and financial responsibility that they also were instilling in their children.

Progress in financial self-efficacy

Similarly, the effect of a more positive financial belief in enhancing financial self-efficacy levels was shown by the regressions for all three FLEP groups.

Students' comments were mostly about their weak financial self-efficacy or their lack of confidence in their capability to successfully perform the actions necessary to produce the valued financial outcomes, as Bandura (1977) puts it. "It's hard to have a job and to earn money," said one student about earning.

As regards saving, one parent observed that their child was "able to save for a specific goal." Another parent noted that their child "can hold on to money to pay his bills on time." As Bandura (1977) asserts, achievement of financial goals reinforces and enhances perceived self-efficacy.

Spending wisely is one area of struggle for many of the students. As one wrote, "Money is spent way too easily" and another says, "It is hard not to spend money and not to get things I want." Another student admitted, "I am easily talked into things." A student volunteered this explanation, "When you have total access, money can go very fast." Even if the Math Fair was but a simulation, a student realized, "How hard it is spending your own money!" There was also some strongly perceived self-efficacy such as "I'm [now] smarter with money" and "I will be more conservative with my money from now on." Parents attested to this by noting that their children are "more cost conscious" or are now "being frugal." Some parents observed that children are "more careful with spending," while one parent saw that they are "able to resist impulse-buys." It is likely that parents

encouraged these changing behaviors. Such positive reinforcements are ways to enhance self-efficacy as Bandura (1994) had postulated.

Budgeting had put some strain on students as suggested by this student's statement, "It's difficult to pay bills and spend money on things you need and have extra money left over." But another student felt self-assured as he wrote, "It is very possible to live within your means." Parents mentioned that their children gained in appreciation of the importance of budgeting money and staying on budget.

Improvement in financial behavior

Improvement in financial behavior was demonstrated to be significantly influenced by enhancement of self-efficacy, as seen in the regression for the Two+ Module group. Stronger perceived self-efficacy had been associated with improvements in behavior (Bandura, 1977; Ozmete & Hira, 2011). Bandura (1997) postulated that a certain level of self-efficacy has to be attained for behavioral change to occur and persuasion is one of the ways to improve self-efficacy. Parents could have influence as shown in the fact that direct teaching was a significant explanatory factor for financial self-efficacy levels in the Two+ Module group, the group in which financial self-efficacy significantly predicted financial behavior. Whether it is authoritative or affective, parental teaching boosted financial self-efficacy, which in turn influenced improvement in financial behavior.

In the financial behavior models for Two Module and Three Module, there appeared to be a very weak and not significant relationship with financial self-efficacy. A possible explanation is the notably weak perceived financial self-efficacy that most of the students had expressed. For example, it was hard for them to resist pressures of buying stuff and they found it difficult to set aside money for savings.

For the Two Module group, it was financial knowledge gain that significantly influenced the improvement in financial behavior whereas financial self-efficacy's influence was not significant.

There were students who mentioned similar statements to this one, “I already save money, but I will save even more.” Another student had a goal: “I should start saving more than I do so I can have a good financial start.” Made aware of unexpected events “that could cost you money,” one student explained that saving more became an imperative. “So that I will always have a cushion,” said another. Since these students have the habit of saving, raising their awareness about what a household’s financial future entails got them to easily improve their financial behavior.

In terms of earning, one parent tells of how their child applied the lessons learned: “She now knows how often she needs to babysit to earn the money she wants to have things.” After the FLEP, several parents revealed that there were “more conversations about career; more connection between current schooling and future goals.”

In terms of saving, some students said that they will start saving or will save more because now they know how to save and what to save for. One student said, “Save first before buying.” Parents posted a host of comments on how their children are changing in their savings behavior. After the FLEP, parents listed behaviors such as: began small savings, saves more, now saves money in a bank account, accomplishes savings goals, and “saves rather than spends.” Another parent specified that their child is “saving money for bills ahead of time; and holding on to it.”

Parents observed that their children started spending money wisely. One parent noticed that “she has been thinking before spending on stuff that isn’t important.” Another parent observed that their child is “spending less money on ‘wants’ and more on ‘needs’.” Another parent said their child now “monitors spending.” In the student words, the plan is to “prioritize my spending; buy the necessities first before wants.” Another one suggested, “Not to overspend.” A student provided another advice: “Not to spend under pressure. Say no when you need to; don’t be intimidated.” One of the students resolved, “I will bring less money to the mall when I go.”

In terms of budgeting, one student suggested “to make a plan for your dollars.” Another said, “Don’t spend what you don’t have.” As another one puts it, “Live within your means.” Before purchasing something, one parent said their child had become “more conservative on what things cost and [asks] does it fit in our budget (monthly)?” One of the tools to ensure that they stick to the budget, a student wrote, “Keep track of money and of what you spend.”

Implications of the conceptual framework

There is a practical use of understanding the conceptual framework depicting pathways of impact derived from participation in financial education programs. An effective FLEP increases knowledge which in turn builds up a more positive financial belief. These two financial outcomes enhance financial self-efficacy which in turn leads to improvement in financial behavior. To educators who intend to set up programs aimed at improving financial behavior, an understanding of this pathway is key to identifying the barriers and facilitators to achieve this aim. Lack of knowledge could be a barrier to behavioral change, but also biases and lack self-mastery in spending as Huston (2010) and Bandura (1977) have suggested. This could explain why the magnitude of the direct effects of FLEP decreases from 17% for knowledge to 7% for belief, to 2% for behavior.

A direct effect of FLEP on financial self-efficacy was not detected when intervening factors were considered, but it was positively correlated to the FLEP participation score at moderate strength, $r(65) = .19$, *n.s.* The lack of detection in the presence of other factors might point to interactions of the FLEP with non-FLEP factors. A more direct clue comes from students’ comments about their perceived self-efficacy. There were more students who stated that they find some difficulty in resisting impulse buy or in setting aside money than those who said it was easy to resist. These are examples of doubts in self-efficacy, poor savings habits and weak discipline as regards money matters. One parent distinguished a gain in financial belief but without a corresponding change in behavior: “Importance of saving for the future is understood, but the execution is lacking.”

Thus, knowing where the constraints lie would help teachers and parents find effective solutions through education, design of an interactive learning environment and setting of realistic outcome goals for teens. They could craft exercises in self-mastery and money management to improve self-efficacy. Habits are formed with repetition of the same actions and obviously would take time. Small successes reinforce and strengthen self-efficacy.

On the other hand, possession of good savings habit is a facilitator to behavioral change. Once students were made aware of long-term goals to have a better life in the future, other ways to invest, the possibility of unexpected events and the real cost of living, they increased their savings frequency and amounts for "future needs," by both setting aside money and spending less. This could explain why a change of knowledge could have a direct effect on financial behavior where self-efficacy is already strong.

With best of intentions right after the Math Fair, 76% of the respondents planned to "change the way they save" and 81% to "change the way they spend." However, after one month, this was down to 29% of students who actually improved in savings behavior and 44% in spending behavior. Past studies have demonstrated that having financial knowledge and skill and positive belief in the importance of practicing welfare-enhancing financial behaviors to achieve worthwhile goals are not enough to actually improve in financial behavior (Mandell, 2006: Bandura, 2004). And this casts doubts on their capability in performing the behaviors needed to attain those goals. In other words, in addition to knowledge and positive belief, strong self-efficacy is needed to improve their behavior.

8.1.2 Effects of Intervening Factors on Financial Outcomes

Since the FLEP is happening in its natural environment, the effect of non-FLEP factors on the students' financial outcomes were examined. These variables collectively referred to as intervening variable, include parental and peer influence, access to money and having a job. Based on Three Module's regression models, some of the intervening variables enhanced the change in financial

outcomes and others hindered it. The other FLEP variants' financial outcome variance had different sets of intervening variables making significant contributions to them. This was to find out if there were patterns that could associate particular intervening variables to the students' specific financial outcomes.

Parental influence

Parental influence was prominent in the regression models for Two+ Module group. Earlier correlations showed that direct teaching, reinforcement and observed behaviors did display positive and highly significant correlations with all of the pretest financial measures (Table 5.37).

After accounting for the respective baseline financial outcomes, parental teaching had a significant contribution to the models explaining the improvements in financial subjective financial knowledge, financial self-efficacy, and financial behavior. Parental reinforcement had a significant contribution to the model explaining the enhancement of financial belief. These findings affirm the theory of financial socialization which holds that children and adolescents in particular, develop financial and consumer knowledge, skills and attitudes by interacting with socialization agents such as parents, peers and school (Danes, 1994, Shim, Barbers et al., 2009). Studies have shown that parental socialization in matters that deal with money influences children's ways of gaining financial knowledge and skills and attitudes (Danes & Haberman, 2007; Shim, Xiao et al., 2009). Koonce et al., 2008 have reported that parent teaching their children personal finance was important and effective.

Although the main effects of parental influence predictors were not detected for the other groups, it does not preclude absence of parental influence. It is possible that there existed interactions with FLEP participation and other intervening factors but these were not measured in this study. It is possible that the effect of FLEP is mediated by parent teaching as they are the filters of teen acceptance of new information (Danes, 1994). In fact, one parent mentioned that the FLEP "prompted several good discussions." Another parent wrote: "He has shown an increased interest in

finances." These parent-child discussions about personal finance and future careers are learning moments, more importantly, a nudge to behave accordingly.

Parental comments on the survey conveyed their keen interest in following the progress their children were making after participating in the FLEP. As one parent stated, "I support teaching children about financial matters because the younger generations don't learn unless we (parents) make a point of it." Parents' interest and role in reinforcing financial outcome gains brings to the fore the implication that it makes sense to actively involve parents in the next implementations of FLEP. School-home collaboration in school children's financial education could also benefit the parent's needs in improving their own financial literacy as Johnson and Sherraden (2007) have demonstrated; particularly those who are unbanked.

Peer influence

The unique contributions of peer influence variables on students' post-FLEP financial outcomes were detected despite the fact that most of the variables could not be considered reliable. Reliability can be reduced by lowering the number of subjects. In this regard, half of the students did not really know if their peers manage their expenses or whether they spend more than they do. About two thirds did not know whether their peers are members of clubs and two out of five were not aware if their peers had jobs.

Only the variable, peer's educational plan, was found to be reliable as a predictor of financial outcomes. That is because in the Career Investigation module, all the students got to know the careers their peers plan to pursue. Numerous studies had examined intergenerational transmission of educational opportunities to children. Parents who are college graduates tend to have children who also graduate from college. The higher the education, the greater the opportunity for good-paying careers, and the higher their socioeconomic class would be. Thus, the variable, peer's educational plan, is considered in this study as a proxy to socioeconomic status.

Peers' educational plan appeared to influence some of the financial outcomes. It had a positive relationship to Two Module's financial quiz scores, but was negatively associated to the change in financial behavior. This predictor also had a negative relationship to the change in Two+ Module group's financial self-efficacy and financial behavior. This implies that the higher the socioeconomic class, the higher their financial quiz score was, but the lower their levels of financial self-efficacy and financial behavior were. A student comment could partially explain this, "When you have total access, money can go very fast." It is possible that wealthier families provide their children with money without "rules parents put in using the money" as Furnham (1999) indicated was key to financial literacy.

Parents with less means or simply parents who believe in bringing up self-reliant children, would set rules on what the money is for and encourage working for extra money. It is also possible that the less wealthy students are more motivated to get a job, and it is having a job that this study found to be associated with better financial knowledge and behaviors. Further, students who earn from odd jobs tend to have higher levels of financial belief and self-efficacy.

Peers with jobs had a positive relationship to Two Module's post-FLEP financial subjective knowledge. This indicated that for this group, the more of their friends who had jobs, the greater their influence on the students' financial knowledge. Thus like Furnham (1999), it seems that it is not the fact of having money that makes an adolescent financially literate, it is what they do with the money.

Peers' expense management had a positive relationship to Three Module's post-FLEP financial belief. This was true only for those students in this group who had observed their peers manage their expenses and avoid overspending. This indicated that the more their friends do this, the more positive their financial belief was.

Peer club membership had a positive relationship to Two Module's post-FLEP financial quiz score. This suggested that the more the students' friends were members of a club(s), the greater social capital input they had in their financial objective knowledge and so had a higher score. Learning from peers is shown by this variable.

Students' access to money

The effect of students' access to financial resources on their post-FLEP financial outcomes was considered separately depending on where the money came from. Getting allowance for chores had a positive relationship to Two+ Module's financial quiz score. However, it had a negative relationship to Three Module's financial quiz score. Receiving plain allowance had a negative relationship to Two Module's post-FLEP financial subjective knowledge outcome. Receiving an allowance was not associated with knowledge of what to do with money, as other studies had shown (Furnham, 1999; Doss, Marlowe & Godwin, 1995; Mortimer, Dennehy, Lee & Finch, 1994).

Having savings at home showed a positive relationship to Three Module's improvement in financial belief and financial self-efficacy. But having a savings account had a negative relationship to Two Module's change in financial belief. The students were not asked if they deposited money in their savings account. A possible explanation for this is the fact that a savings account in the student's name could have been opened by their parents or opened with their parents' permission. By law, most of these student accounts restrict the full control of the child until they reach the legal age. Besides, many of the students indicated that they were rarely, if at all, brought by their parents to the bank so that they could deposit or withdraw their money. In contrast, students have more control over their savings at home, in which case, they can make financial decisions with their money consistent with their beliefs and self-efficacy.

Getting wages from odd jobs had a positive relationship to Two Module's improvement in financial self-efficacy but had a negative relationship to Three Module's change in financial belief.

This negative relationship with financial belief for Three Module group could indicate that students here were not out to work to save for long term goals, in general. They could have been made to believe that if they want to purchase something they want, they have to get a job. Another possible explanation could be that with 82% of them revealing that they borrow money, some students could be working to pay off what they owe. It is also probable that being out of the house during job time, makes them spend more for things like food or entertainment, rather than save the money or budget it for something else. Borrowed money had the biggest effect as an intervening variable for Three Module's financial quiz score, but the relationship was a negative one. Thus for this group, students who borrowed money tended to have lower quiz scores than those who did not.

The effects of access to money were mixed. The regressions did not detect any main effect of access to money on posttest financial behavior. But Pearson correlations showed a positive relationship between savings at home and post-FLEP behavior (Table 5.45). Furnham (2001) has shown that it is not access to money that explained financial behaviors but rather what the teens do with the money. What they do with the money was explained by the parents' attitudes and what parents teach the teens about money.

Having jobs outside the house

The unique contribution of "had odd jobs" was detected as a positive relationship to Two+ Module's increase in financial subjective knowledge and Two Module's improvement in financial behavior. This suggested that the groups' students who had odd jobs tended to have higher levels of financial subjective knowledge and better financial behaviors than those that did not, all other things being equal. It can be noted that there were more students who reported that they had jobs than got paid for jobs. It is possible students performed some jobs in exchange for something other than money or paid what they owed with a service.

8.2 Future Research

Methodology

Improvement in the instrumentation can further contribute to more conclusive evaluations on the effectiveness of this type of program for middle school children. Scale development and adoption by more evaluators would move closer to more accurate comparative studies among different financial literacy programs.

Collection of data could be done at multiple times to examine the difference in the effect of the year-long Three Module variant versus the other two module variants. This would determine if it was worth the amount of effort, time and resources. All that can be concluded with the data received for this study is that the Three Module group showed a large difference in knowledge and skills about Checkbook balancing and factors for getting a car loan. In addition, the improvement in attitude for the Three Module group was changing at steeper rate, which could imply better internalization of beliefs. From the freely expressed statements of the students, the highest percentage of students from the Three Module group commented on earnings and budgeting, almost a 13 percentage points higher than the other groups. As pointed out earlier, the notion of budgeting is more complex to grasp than simply saving and spending wisely. As a flow concept, budgeting and managing money require a comprehension of income, spending, and saving, as well as its link to choices that aid, attain, and maintain lifestyle objectives and lifetime values with a sense of the immediate and the future.

Longitudinal studies

Longitudinal evaluations could be conducted using the instruments developed to assess medium term effects of the FLEP. This would examine the "stickiness of the financial outcome gains from participating in the middle school's FLEP as they go through their life stages in high school and college. Would they be earning better grades as an indicator of their belief that a good education

would land them a better paying job in the future? Would their savings and spending habits be improving towards welfare-enhancing choices? Would they be using more budgeting and tracking of expenses that support their medium and long-term financial goals?

The longitudinal study would be able to demonstrate whether the effects of the year-long Budget and Checkbook Project had better results as the students mature. In which case, it was worth the time spent in implementing this FLEP variant.

Theory testing

Unique to this study was how the independent variable—FLEP participation score—was conceptualized and operationalized. It depended on the participants' perception of their effort to learn and their fulfillment of the requirements. No study was found that itemizes the independent variable (treatment) into its component parts—the human capital (personal effort) and social capital (learning from others involved in the same program). Although studies established the importance of socialization in formal and informal education, only the informal form of financial socialization from parents (Bowen, 2002), peers and jobs have been used as independent variables (Gutter, Eisen & Way, 2009). This study was an attempt to use the socialization in a formal educational setting for demonstrating that social learning can explain some of the variance (increase) in knowledge of participants. Student learning through social interactions in a school setting can be further studied. Found to explain a portion of financial knowledge variance, learning from others, like group activities, could be purposely added to the design of FLEP.

A theory of change posited in this study is that enhancing financial literacy as part of the students' human capital requires the transmission of human capital (knowledge and skills) to the student, financial capital or money, and social capital or learning from others. Parents are effective transmitters because aside from teaching financial matters, reinforcing them and by modeling the behavior, they also provide money in the form of allowances, gifts and pay for odd jobs. If students

have jobs, they also learn job related financial concepts, receive wages, and can learn from other workers. The FLEP imparts financial literacy and since it is school-based, social capital is also a resource for learning, but there are no monetary provisions. It would seem that if there were real money involved, the effect of the FLEP would be enhanced because it adds the dimension of making financial decisions with the risk of losing money or an opportunity of making more money.

There are bank savings incentive programs tied to financial literacy programs for children (12 and under) and teens (13-18) to encourage children to save, the Office of the Comptroller of Currency (OCC, 2011) reports. These banks offer children's accounts with low or no minimum deposit. They are not charged a monthly maintenance fee nor required a monthly balance. For youth from low income households, programs such as the child development account (CDA) have grant funds that match savings deposits of the children or their parents up to an average of $1000 (Sherraden & Stevens, 2010). But these accounts are restricted to be used at legal age by the child for postsecondary education, buying a house or for retirement. Children in middle school and high school are required to participate in financial education classes. Programs for younger children require parents to attend financial literacy sessions and they are given monetary incentives to do so.

There is a bank that matches deposits up to $10. At the end of the school year, the bank deposits $1 into children's savings accounts for each "A" on the child's report card up to $5. Another bank gives the children a stamp for each $5 deposit. When the children earn 10 stamps each, they receive gift certificates to their choice of retail stores, restaurants, or movie theaters. However, Willis (2008) sees a problem of attribution of impact on students to the financial literacy program when financial incentives or direct assistance are bundled with education. It is possible that outcomes may be attributable to the assistance or incentives rather than the education. Future research can examine and isolate the effect of financial education from other aspects of the program.

Another point to consider is the question of access to financial services. If children could not on their own go to the bank to open an account, deposit or withdraw their money, their financial capability is stymied (Johnson & Sherraden, 2007). Parent involvement could be recruited. The more effective way is to have the bank or credit union close-by or on campus. The OCC (2011) also reports the establishment of mini banks or bank/credit union branches in middle school or high schools. In collaboration with the host school, these banks provide financial education both theoretical and practical, hands-on training for student-run facilities and accessibility to answer any query about banking and its services. This arrangement has also been effective in drawing the 'unbanked' parents to start going mainstream with their children.

8.3 Statement of Limitations

As a case study, the results have limited generalizability to other places outside of the Middle School in New England, although it accounts for 85% of total eighth graders in public and private schools in the city. But it can be used to generalize a theory of change in enhancing financial literacy for this age group. Cultural, regional, or ethnic norms differ and can affect financial literacy in certain circumstances (13-14 years old). External factors such as the condition of the local economy, business and political climate, policy support for in-school curricular incorporation of FLE programs, cultural context and the state of infrastructure could differ in various locations of the country that could significantly affect financial literacy of this age group.

It is possible to encounter threats to internal validity in this study. As students were said to be randomly assigned to their clusters by the school administration, the results could be free of selection bias. The differences in treatment content, delivery and duration were decided by the separate groups of teachers in each cluster. In this case, it turned out to be a natural experiment. However, the equivalence of the treatment groups could not be verified due to privacy issues related

to having access to the students' personal information such as socio-economic indicators and cognitive measures such as standardized math and reading scores. Both socio-economic variables and cognitive ability have been shown to influence literacy in general and financial literacy in particular.

Although there was an attempt to verify whether the clusters were equivalent using comparative tests of baseline financial measures, the fact that certain classes were excluded from taking the survey meant that the results can be applied only to students who were mostly whites and minorities who speak English and who have no learning difficulties.

The close proximity of the students belonging to the different clusters of the same school increased the chances of either the "diffusion or imitation of treatment or "compensatory rivalry." Both are social interaction threats to validity. The treatment groups were receiving different modules of the FLE program. Only one of four clusters received classroom and experiential instruction for a whole academic year in the "Budgeting and Checkbook Project".

Diffusion or imitation of treatment could have happened in this school setting where students from different groups could have shared experiences during their common break times or outside of school. The students of the no Checkbook Project groups, seeing what the program group was getting, might set up their own experience to try to imitate that of the program group or learn it from family members. If the diffusion or imitation affected the posttest outcomes of the no Checkbook Project groups, it could have reduced the ability to assess whether the program was causing the outcome. Diffusion or imitation would tend to equalize the outcomes among the groups, minimizing the chance of seeing a program variant effect even if there is one. This could explain why subjective financial knowledge after the program found only a small difference between Three Module and the other groups. Further, self-assessment of the amount and quality of knowledge the other groups possessed was likely overrated by students who think they "Know it well" but actually

know less than the group that took the module. What constituted "I know it well" or "Know it somewhat" would vary widely by student.

Compensatory rivalry could happen when students of other clusters know that one particular cluster is receiving something special that will help them and they are not. In this case, the students in the no Checkbook Project clusters might develop a competitive attitude with them just to show that they can learn the same things as well, possibly from their parents. If this affected the posttest rating of their financial outcomes by the no Checkbook Project groups, it could have reduced the ability of this researcher to assess whether the program variant was causing the outcome. Like diffusion or imitation of treatment, this would tend to equalize the outcomes among the groups, minimizing the chance of seeing if the program variant was effective.

The social interaction threats could have been minimized by the fact that the year-long experiential modality of the instruction for the Checkbook Project would be hard for the other students to replicate. It would be like learning to drive from reading a book but without driving a car. Despite, self-assessment threats of equalizing outcome across groups, comparative tests showed that there was a significant difference in the posttest performance. In fact, of the knowledge aspects that were unique to Three Module, there was a 20% difference in increase of the knowledge and skills needed to "balance a checkbook" and 8% in "factors for acquiring a car loan." Only parents of Three Module students confirmed these learning outcomes. In addition, parents expressed their appreciation for the program variant for reinforcing fiscal responsibility that is also taught at home. Part of the Budget and Checkbook Project included biweekly deposits of net pay, budgeting, tracking of income and expenses, checkbook balancing and monthly bills payment of house rent and car loans, from September to May of the academic year.

Although each cluster was made up of several classes of students, each part of a FLEP variant was taught by only one teacher. Thus, the results could be due to the 'experimenter' effect. The

treatment might have worked because of the person implementing it. Given a different person, the treatment might not work as well or at all.

The students who performed better than others might have personal characteristics not representative of the entire eighth grade student population of the Middle School. These students may be wiser with their money and more resourceful, have a stronger commitment to thrift and saving resources for their future, most likely on account of family influence. It may be difficult to attribute an unknown portion of the effects on financial literacy, attitudes and behavior to the intervention. This was evident from the results of the series of multivariate regression analyses that showed that a significant portion of the changes in financial outcomes were due to the baseline measures and other non-FLEP factors. Still none of the regression had models that were explained totally by the main effects of the combination of predictors. There were portions that remained unexplained. There could be unobservable traits or characteristics that are not easy to measure and can be considered a variable that is omitted in the regression analysis.

As the teachers administered the surveys, the threat of social desirability could have increased (Trochim, 2001). Student-respondents might have answered the way they think will be viewed favorably by the teacher. Students might over-rate their financial knowledge and good behavior or under -report bad behavior. It is not known whether the teachers assured the students that the survey would not affect their grades or be used against them. It was not certain if teachers explained that the survey sheets would be identified not by name but by number codes to preserve anonymity.

Historical and maturation threats may affect the results particularly with the Three Module which provided a year-long education. Some other internal validity issues include historical events like getting interested through social media or financial literacy program websites, video games, instructional videos and other formats, although this was minimized by the fact that a question was

asked in this regard and controlled in the regression. Maturation is known to correlate with cognitive ability and thus improve learning and comprehension of the FLE program. This could have been minimized with a control group.

8.4 Implications

The results of the study are a contribution to an understanding of the outcomes of financial literacy education programs of the experiential and simulation modality. This study showed its short-term effectiveness in increasing financial literacy and improving financial behaviors of these eighth graders. Based on the theory of change, increasing financial awareness and literacy is but a first stage. Through high school, it would take more financial education appropriate to their age and life stage to sustain and further increase the gains in financial knowledge, attitude and behaviors. As they are prepared academically for college, it would be recommendable to also get them finance-ready to invest in their post-secondary education and join the workforce.

The study partially addressed the fact that a provision for financial education should consider the sources and uses of money at this developmental stage. Parents are the main sources of money and the rules on how to earn it, spend it and save it. Just as previous studies have shown, parental influence plays a key role in enhancing financial competence of school age children. As parents are the lens through which children filter their financial knowledge and beliefs, involving parents would accelerate learning financial concepts and reinforce the internalization of positive financial attitudes and values that deal with work, earning, giving, saving, spending and managing money.

K-12 schools in New England face the option of integrating age-appropriate personal finance education in the curriculum, as mandated by some of New England states' policies in financial literacy education. Many schools in New England have either voluntarily added or incorporated aspects of FLE programs in their curricula or offered personal finance as an elective in high school.

However, schools that have not done so, find that adding this component to their curricula involves huge investments in resources to develop the program and train teachers. It also requires a major adjustment to the teachers, particularly if they will add aspects of personal finance to their teaching tasks. Unlike Math, Writing and Reading, personal finance programs are not standardized. The way instruction is delivered varies widely. Further, school children in New England are not tested on personal finance with a standardized test as no such requirement by these states exists. There is no incentive in measuring behavioral outcomes, which also are not easily measured. That makes it a challenge to replicate certain types of financial education programs as well as to measure their impact and cost effectiveness.

For this middle school, the effectiveness of the financial education program was demonstrated. It could be used as a justification for sustaining the program and further improving it to actually change financial behavior. For other schools, it could serve as an encouragement to make the investments needed to add personal finance components to their curriculum and adopt the experiential modality of a FLE program. Schools could also forge partnerships with financial institutions and find the resources to train their teachers to enable them to teach it effectively. The best way for them to learn is by immersion in well-run and successful programs like this one. Schools may choose to rather forge partnerships with financial or educational institutions that deliver the relevant training and/or develop curricula for teachers to use. It can encourage more teachers to overcome their aversion to teach a new subject matter like personal finance.

Ultimately, if one of the schools' main goals is to prepare their students for an economically sustainable adult life, financial literacy education has to be taken seriously. They could learn from the experiences of trail blazers and adopt effective Financial Literacy Education programs. Acquiring this vital life-skill can spell the difference in sustaining financial and economic well-being of future households and collectively, of national financial and economic stability.

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APPENDIX: THE STUDENT SURVEY

Please check (√) the answer that best describes the statement. Answer only the modules you participated in.

	STATEMENT	ANSWER CHOICES			
1	I actively participated in **Career Investigation** …	All parts of it	Most of it	Few parts	**Did not take Career Investigation**
2	Things I completed…(Check all that you did)	a resume	job application		
3	I experienced a mock job interview …	Yes I was interviewed	I was only an observer	Did not see this	
4	I felt that my teacher(s) cared that I learn from doing the Career Investigation	All of them	Some of them	Not really	
5	I actively participated in **Math Fair** …	Yes	No		**Did not participate in the Math Fair**
6	I completed my budget and got a certificate…	Yes	No		
7	My friends and I supported each other during the Math Fair …	A lot	A few times	Not really	
8	The credit counselor in the Math Fair helped me figure out my budget …	Helped a lot	Helped some	Not really	
9	I felt that my teacher(s) cared that I learn from being in the Math Fair…	All of them	Some of them	Not really	
10	I actively participated in the **Checkbook Project** …	All parts of it	Most of it	Few parts	**Did not take the Checkbook Project**
11	I completed all the requirements …	All of them	Most of them	A few	
12	I learned from the presentations of the credit union representative	Learned a lot	Learned some	Not really	
13	The credit union loan officer helped me understand how to get a car loan …	A lot	A little	Not really	
14	My friends and I helped each other during the Checkbook Project	A lot	Sometimes	Not really	
15	I felt that my teacher(s) cared that I learn from taking the Checkbook Project	All of them	Some of them	Not really	

Please CIRCLE what best describes the statement. Think of the parent or guardian you are with most of the time.

		ANSWERS				
What my parent(s)/guardian would do …		**Not really**	**Few times**	**Sometimes**	**Many times**	**A lot of times**
1	discuss banking concepts with me	1	2	3	4	5
2	discuss budgeting with me…	1	2	3	4	5
3	speak to me about the importance of saving…	1	2	3	4	5
4	teach me how to save…	1	2	3	4	5
5	teach me how to invest…	1	2	3	4	5
6	speak to me about how money should be spent…	1	2	3	4	5
7	expect me to save	1	2	3	4	5
8	bring me to the bank to deposit or withdraw my money	1	2	3	4	5
9	approve of the way I use money …	1	2	3	4	5
10	set aside money regularly for the future…	1	2	3	4	5
11	track monthly expenses …	1	2	3	4	5
12	spend within the budget …	1	2	3	4	5
13	manage their expenses and avoid overspending …	1	2	3	4	5
14	go to the bank to do some business there …	1	2	3	4	5

Please check ALL (√) that is true in your case

	STATEMENT	ITEMS			
1	**I have my own** (Check all that you own)	savings account	money that I save at home	None of these	
2	**My sources of money are** (Check all sources)	allowance if I do my chores	allowance without working for it	Gift (money)	None of these
3	**My sources of money are (**Check all sources**)**	income from jobs outside my home	income from part-time employment		
4	**I borrow money**	Yes, I do	I don't borrow money		

Please CONTINUE. More at the BACK page!

Please rate how much financial knowledge you know NOW, then what you knew BEFORE the financial education program.

Financial Knowledge		I know it well	Know it somewhat	No idea
1. I understand the cost of buying with loan	Now	3	2	1
	Before	3	2	1
2. I know how to calculate an annual net pay	Now	3	2	1
	Before	3	2	1
3. I know how to create a budget	Now	3	2	1
	Before	3	2	1
4. I know the difference between a need and a want	Now	3	2	1
	Before	3	2	1
5. I know how to balance a checkbook	Now	3	2	1
	Before	3	2	1
6. I know the financial factors a bank or credit union consider in approving a car loan.	Now	3	2	1
	Before	3	2	1
7. I know the cost of living (housing, groceries, clothing, etc.)	Now	3	2	1
	Before	3	2	1

Please rate your financial beliefs and confidence NOW, then BEFORE the financial education program.

Financial Beliefs		Not at all important	A bit important	Moderately important	Quite important	Very important
1. I would rate saving regularly as…	Now	1	2	3	4	5
	Before	1	2	3	4	5
2. I believe that spending within the budget is …	Now	1	2	3	4	5
	Before	1	2	3	4	5
3. I would rate saving/investing for a long-term goal as …	Now	1	2	3	4	5
	Before	1	2	3	4	5
4. I think that using a budget is …	Now	1	2	3	4	5
	Before	1	2	3	4	5
5. I think that tracking of expenses is …	Now	1	2	3	4	5
	Before	1	2	3	4	5
Financial Confidence		**Not at all true of me**	**A bit true of me**	**About halfway true of me**	**Mostly true of me**	**Very true of me**
1. The way I manage my money will affect my future …	Now	1	2	3	4	5
	Before	1	2	3	4	5
2. I think I do pretty well at making decisions that deal with money …	Now	1	2	3	4	5
	Before	1	2	3	4	5
3. I use my money very carefully…	Now	1	2	3	4	5
	Before	1	2	3	4	5
4. I usually achieve my financial goals…	Now	1	2	3	4	5
	Before	1	2	3	4	5
5. I budget my money very well…	Now	1	2	3	4	5
	Before	1	2	3	4	5

When you get money from these sources, please circle the portion of the money that you save (or set aside) NOW, then BEFORE the financial education program

Sources of income		Almost none of it	Less than half of it	About half of it	Most of it	Almost all of it	I don't get this type
1. Allowance (no chores required) I receive from my parents	Now	1	2	3	4	5	0
	Before	1	2	3	4	5	0
2. Pay I get from my job(s) outside the house	Now	1	2	3	4	5	0
	Before	1	2	3	4	5	0
3. Money I get for performing house work	Now	1	2	3	4	5	0
	Before	1	2	3	4	5	0
4. When I get gift money	Now	1	2	3	4	5	0
	Before	1	2	3	4	5	0

Please circle what best describes your financial behavior NOW, then BEFORE the financial education program

Financial behavior		Almost never	Seldom do	About half the time	Very often	Almost always
1. When I shop, I compare prices before buying …	Now	1	2	3	4	5
	Before	1	2	3	4	5
2. Honestly, I impulse buy …	Now	1	2	3	4	5
	Before	1	2	3	4	5
3. I wait to buy items on sale …	Now	1	2	3	4	5
	Before	1	2	3	4	5
4. I create a spending plan (budget) …	Now	1	2	3	4	5
	Before	1	2	3	4	5
5. I stick to my spending plan (budget) …	Now	1	2	3	4	5
	Before	1	2	3	4	5
6. I track the money I get and where it goes …	Now	1	2	3	4	5
	Before	1	2	3	4	5
7. I track my expenses …	Now	1	2	3	4	5
	Before	1	2	3	4	5

		I usually SAVE all my money right away	I usually SAVE most of my money	I usually SPEND almost half of my money	I usually SPEND most of my money	I usually SPEND all my money right away
8. When some kids get money, they spend it right away. Other kids want to save their money. What about me?	NOW	1	2	3	4	5
	BEFORE	1	2	3	4	5

Please check (√) the answer that best describes the following statements about your friends

STATEMENT	ANSWERS				
1. I have observed how my friends manage their expenses and avoid overspending …	Do not see if they do	Very few times	Sometimes	Many times	A lot of times
2. In terms of spending, most of my friends		Spend too little	Spend just right	Spend too much	
3. My friends are members of clubs like the 4H Club, Boys & Girls Club and others …	Don't know	Few of my friends	Some of my friends	Most of my friends	All of my friends
4. My friends have jobs outside the house	Don't know	Few of my friends do	Some of my friends do	Most of my friends do	All of my friends do
5. The highest level of schooling that most of my friends want to acquire is …	Finish High School	Trade or vocational school certification	2 year college or Associate degree	3-4 year College degree	Post graduate /Professional (Medicine, Law, PhD, Masters)

Please CIRCLE the answer that best describes the following statements

STATEMENT		RESPONSE	
1.	In the last six months, I took on odd jobs outside your home?	Yes	No
2.	In the last six months, I was employed part-time	Yes	No
3.	Have you ever taken a course, program, or seminar on personal finance issues in your community, religious institution, or 4H-in other words not through school? …	Yes	No
4.	In the last six months, I have been using some books and the internet to learn more about financial matters	Yes	No

Please CIRCLE the best answer without using a calculator

QUESTION		ANSWERS			
1.	Suppose you have $100 in a savings account earning 2 percent a year. After 5 years, how much would you have in the account if you left the money to grow?	More than $102	Exactly $102	Less than $102	
2.	The BEST indicator of the cost of a loan is the	number of monthly payments	monthly payment amount	interest rate	annual percentage rate
3.	Pay-Yourself-First" means that	I spend money as soon as I get paid	When I receive money, I save some of it	I pay my bills before loaning others any money	I use a method of saving for retirement
4.	Why should a person balance his/her checkbook?	In order to know how much money I have on hand	To decide if I can get two credit cards	To be able to buy now, pay later	To find out his/her credit score
5.	Why is it necessary to pay your bills on time?	Helps me avoid late fees and low credit score	Because my taxes will increase	I think it is alright to pay the bill after the due date with no penalty	
6.	When you use a credit card, you	Buy now, pay later	Buy now, pay now	Buy now, pay never	Buy now, pay forever
7.	The three variables that affect saving money in a bank are	amount, interest, and credit	amount, interest, and time	amount, stocks, and time	None of the choices
8.	A record of spending or of expected expenses and income for a given period of time is called	interest	credit	budget	investments
9.	The credit union will approve your loan application if your debt to income ratio is	Less than 35%	About 80%	More than 95%	Exactly 65%
10.	Suppose each can of soda is sold for $1. If you want to buy 4 cans of soda, which one is the best deal?	Buy 1 and get 1 at 50% off	Buy 3 and get 1 free	Both deals gets me 4 cans for the same amount of money	Need more information

Thank you!

Curriculum Vitae

Antoinette Bolanos initially prepared for a science career by acquiring a Bachelor of Science in Chemistry in 1978 at the University of the Philippines (UP). She joined the institution's faculty and later earned a Master of Science in Chemistry in 1985 there. Interested in cures, she obtained an M.S. Pharmacy (Medicinal Chemistry) in 1989 at the University of Houston.

Recruited as pioneer faculty for a newly established undergraduate program in the Philippines, she joined the College of Arts and Sciences of then Center for Research and Communications (now University of Asia & the Pacific). In a mid-career shift, she pursued graduate studies in business economics in the same institution.

After leaving the academe, she worked as an industry analyst for a partner firm of then Coopers and Lybrand (now KPMG), with the management consulting team that assessed for multinational corporations their potential in the Philippine market.

Stirred to address issues of underdevelopment and poverty, Antoinette made another career shift and in 1999, earned a Master in Development Management with distinction at the Asian Institute of Management (AIM). Her Management Research Report proposed a community-based coastal resource management initiative for a fishing town that would pull together all village stakeholders in creating and implementing a negotiated strategic plan, which simultaneously tackles economic, social, environmental, political and social issues. She then worked in a CIDA-funded program that aimed at introducing government agency reforms. Her portfolio comprised agencies regulating the financial sector, specifically the Bangko Sentral ng Pilipinas (Central Bank), Bureau of Treasury, Philippine Deposit Insurance Corporation and the Securities & Exchange Commission.

Back in the academe, she became the Director of AIM's Microfinance Management Office. With professors, microfinance practitioners and researchers, the projects' purpose was to prepare teaching cases in microfinance institution (MFI) management. Concurrently, social funders seeking to know the social return of their investments in MFIs, engaged Antoinette to conduct impact assessments on MFI clients.

In 2006, convinced that a broader systemic intervention and community-wide involvement are required to address poverty issues, Antoinette pursued graduate studies in Community Economic Development (CED) at Southern New Hampshire University. In 2010, she obtained a Master of Arts in CED with specialization in public policy and in 2012, earned a Doctor of Philosophy in CED.