

# Influence of Financial Literacy of Teachers on Financial Education Teaching in Elementary Schools

Hsu-Tong Deng, Li-Chiu Chi, Nai-Yung Teng, Tseng-Chung Tang, and Chun-Lin Chen

**Abstract**—Would teachers' own lack of financial literacy inhibit their teaching financial education in the classroom? Using unique data from a sample of elementary school teachers in Taiwan, this paper examines the impact of teachers' personal financial literacy on the effectiveness of their financial education teaching. Our results substantiated that there is a positive correlation between teachers' financial literacy and financial education teaching. Furthermore, elementary school teachers underlying this study, as a group, show medium-high levels of financial literacy. Teachers generally believe that current elementary school textbooks cannot cultivate sufficient financial management knowledge in elementary school students, suggesting the unsuitability of financial education curricular materials for elementary school teachers. Finally, the results showed that elementary school teachers did not demonstrate significant differences in "highest degree earned," "college major," "number of years teaching social studies," or "school location" in terms of financial literacy as well as financial education teaching.

**Index Terms**—Elementary school teacher, financial literacy, financial education.

## I. INTRODUCTION

Experts in investment and financial management often say that ignorance is the greatest risk in investment and financial management. Experts also generally agree that people lack the financial literacy necessary to make important personal financial decisions in their own best interests [1]-[3]. Thus, it is known that when carrying out financial management there should be considerable cultivation of financial management knowledge. In 2007, Jump\$Start Coalition in the United States has pointed out that financial literacy is the usage of knowledge and capabilities to effectively manage an individual's financial resources, in turn achieving the purpose of financial security in life [4]. Financial literacy or

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personal financial management is the knowledge, capabilities, and decision-making ability of an individual in money management. Financial literacy and money values do not just influence personal life, but also affect national economic and social stability.

In 2005, OECD published a book about the enhancement of personal economic security consciousness and financial management responsibilities. The book points out that elevation of personal financial literacy can lower the personal risk of poverty, as well as promote national economic development. Bakken [5] also argued that lack of financial literacy in students is because they have not received adequate financial education. Alan Greenspan, former chairman of the United States Federal Reserve, and Shive Hsueh, former chairman of the Taiwan Stock Exchange, both suggested that school administrators should enhance the effectiveness of financial education for students, through which students can understand financial management problems and prevent incorrect financial decisions in the future.

To better enhance financial literacy of citizens, many advanced countries have already begun financial management education for their citizens and students. For instance, the United States Department of the Treasury established Office of Financial Education in 2002, which has not only worked hard for promoting financial management education to adults, but have also promoted financial management education for students, even hosting stock market simulation competitions and courses from elementary school to university starting in 1977. In addition, the private organization Jump\$Start Coalition has actively promoted financial curricular guidelines from kindergarten to high school (K-12). In financial management education in Japanese schools, Japan Securities Dealers Association and Tokyo Stock Exchange Group provided financial management instructional materials for students in elementary school through university, and in 1996, released an investment competition simulation course to enhance students' financial literacy.

From other countries to Taiwan, from scholars, experts, to government officials, almost everyone affirmed the importance of financial management education, and considers that the government should play the role of active intervention, incorporating investment and financial management into the official curriculum starting in elementary school, and train students to have financial literacy by cultivating their money management and usage concepts.

In recent years, financial literacy has gained the attention of a wide range of government agencies, school

administrators, community interest groups, and other organizations [1]. Even though the Ministry of Education of Taiwan began incorporating financial management education into elementary school curriculum guidelines in 2011, past empirical studies have indicated that elementary and junior high school teachers also have the problems of insufficient financial management knowledge and few opportunities for on-the-job study and advancement.

As previously mentioned, financial literacy appears to be directly correlated with financial self-beneficial behavior [6]. A lack of financial literacy can contribute to the making of poor financial choices that can be harmful to both individuals and communities [7]. However, a question exists concerning the effectiveness of a teacher's personal financial literacy in delivering financial education. Teachers' own lack of financial literacy would inhibit their teaching financial education in the classroom.

As such, the present study inferred that the effectiveness of financial education delivered by teachers may be affected by the extent of their personal financial literacy. In this study, elementary school teachers in Taiwan were used as research subjects to examine the impact of financial literacy of teachers on their teaching financial education in the classroom. Results buttressed our contention that there is a positive correlation between teachers' financial literacy and financial education teaching. These results can add to work in this area and can serve as a reference for later policies established by the government.

## II. LITERATURE REVIEW

### A. Financial Literacy

Financial literacy is commonly defined as the ability of individuals to make appropriate decisions in managing their personal finances. More specifically, financial literacy is the ability to understand how money works in the world: how someone manages to earn or make it, how that person manages or invests it, and how that person donates it to help others [8]. Financial literacy and personal financial management refer to the set of skills and knowledge that allows an individual to make informed and effective decisions with all of their financial resources.

Bernheim [9] was among the first to emphasize that most individuals lack basic financial numeric knowledge. These factors, together with a likely contraction of international capital flows, increase the importance of financial literacy for consumers in almost every country. Kefela [7] argued that financial literacy is crucial at many levels. It is an essential element in enabling people to manage their financial affairs and can make an important contribution to the soundness and efficiency of the financial system, and to the performance of the economy.

Rejda and McNamara [10] suggested that personal financial management is the establishment of comprehensive plans based on definitive financial objectives in order to achieve them. Lusardi and Olivia [11] showed that financial literacy is highly correlated with exposure to economics in schools. Chen and Volpe [12] mentioned that the content of financial literacy should be divided into the four areas of

general financial management knowledge, savings and loans, insurance, and investment.

In 2006, Financial Service Authority divided financial literacy into four types of budget, expenditure, products, and information [13]. Widdowson and Hailwood [14] indicated that financial literacy includes basic computation ability, understanding the yields and risks of financial decisions, familiarity with basic financial management concepts, knowing the channels for consultation and assistance, and the ability to understand the content of suggestions. In sum, financial literacy includes the following three areas: general financial management knowledge, the ability to search for and understand financial management information, and the decision-making and responsibility in financial management.

### B. Financial Education

A growing literature has looked into the impact of financial education in the classroom and has investigated whether these financial education programs are effective in improving financial literacy and financial behavior. Financial behavior seems to be positively affected by financial literacy [15], but the impacts of various forms of financial education on financial behavior are less certain: results of related research have shown mixed results. For example, Lusardi and Mitchell [16] showed that retirement seminars had a positive wealth effect, but such an effect was found mainly for those with less wealth or education. On the other hand, Choi, Laibson, Madrian, and Metrick [17] claimed that participants in retirement seminars had better intentions than follow through.

Mandell and Klein's empirical study provided evidence to support the presence of student motivation as a factor in increasing their financial literacy which suggests that motivated adults benefit from targeted financial education [15]. However, these findings were disproved in a later study by Mandell and Klein [6], in which it was found that college students who took financial education courses did not evaluate themselves to be more savings-oriented and did not appear to have better financial behaviors than those who had not taken the courses.

Although the evidence is mixed, we can generally conclude from the literature that there is a need for financial education programs because they do improve the behavior and outcomes of their graduates; there is a connection between knowledge/construct and behavior, with increases in financial knowledge/construct having a positive impact on personal finance behaviors; and that financial education programs that cover specific topics and teach skills are better than those covering more general subjects. Construct refers to an individual's perceptions, ideals, and values in regards to something and its associated traits, as well as the role and behavioral inclinations in which the individual engages.

Financial literacy helps improve the efficiency and quality of financial services. Specifically, financial education can better provide an individual financial literacy, through which to familiar and understand financial market products, especially rewards and risks, in order to make informed choices. Basic financial education should be made relevant and useful to peoples' daily lives and development activities [7].

Tennyson and Nguyen [18] examined the effectiveness of school mandates regarding personal finance on knowledge levels. Their survey data came from the Jump\$tart 1997 survey of high school senior students. The survey contained 31 multiple choice questions covering four personal finance topics and also included questions covering individual demographic and family characteristics. Tennyson and Nguyen [18] indicated that financial education can improve financial literacy if the mandate requires the teaching of personal finance concepts within a specific course.

Prior literature also points out that financial education delivered by teachers may be affected by demographic variables (e.g., gender, age, highest degree earned, college major, subject currently teaching, and socioeconomic status).

### III. METHODOLOGY

#### A. Measures

This study used the self-compiled “Financial Literacy and Financial Education Teaching Questionnaires” as the measurement tool, and collected data on variables in three parts: demographic variables (including gender, age, highest degree earned, college major, number of years teaching, number of years teaching social studies, school location, and school size), elementary school teacher financial literacy questionnaire, and elementary school teacher financial education teaching questionnaire.

Questionnaire design is based on literature review and reference to questionnaires in related studies to establish the questionnaire’s content validity. In addition, related scholars and experts were invited to evaluate and modify the questionnaire content to establish expert validity. The questionnaire used Likert 5-point scale to record points to the responses. This study first carried out a pre-test, and then analyzed the items and made related changes. Results of reliability analysis showed that the two Cronbach  $\alpha$  values for pre-test questionnaires of both financial literacy and financial education teaching are over 0.9 (high reliability), thereby sufficing to serve as the basic framework of the official questionnaire.

With regard to questionnaire construct validity, the values of KMO and Bartlett’s sphericity test (chi-square) for “Financial Literacy Questionnaire” and “Financial Education Teaching Questionnaire” are significantly different from zero, suggesting they are suitable for conducting factor analysis. Factor analysis is conducted using principal component analysis, and Varimax method is used to conduct orthogonal rotation, using the extraction principle of eigenvalue greater than 1 to extract the dimensions, and variables with factor loading greater than 0.4 were used as the considerations in naming dimensions.

“Financial Literacy Questionnaire” consists of 31 question items divided into 6 factors: Financial planning and responsibility (6 items), Banking-related business (6 items), Issues in economic policy (8 items), Tax and insurance planning (5 items), Investment, insurance, and savings (3 items), Consumer finances (3 items). The individual explained variances are 13.5%, 11.6%, 11.2%, 11%, 7.3%,

6.4%, the total explained variance is 61%, showing that the extracted factors have sufficient representativeness. The questionnaire’s overall reliability Cronbach’s  $\alpha=0.95$ , which is high reliability.

“Financial Education Teaching Questionnaire” consists of 28 question items divided into 3 factors: Importance of financial education (12 items), Instructional design and evaluation (11 items), Accommodating financial education (5 items); the individual explained variances are 26.3%, 21.7%, 9.6%, the total explained variance is 57.6%; the questionnaire’s overall reliability Cronbach’s  $\alpha=0.9$ .

#### B. Sample and Data Collection

This study treated 400 public elementary school teachers each in Taipei City and Yunlin County as research subjects, and used convenience sampling to release the questionnaires. A total of 800 questionnaires were released, and 515 were retrieved. After eliminating invalid questionnaires, the number of valid questionnaires was 494, with valid retrieval rate of 62%. After encoding and filing, the valid questionnaires were analyzed using descriptive statistics, factor analysis, validity analysis, reliability analysis, *t*-test, one-way ANOVA, and canonical correlation analysis.

### IV. EMPIRICAL RESULTS

#### A. Results of Descriptive Statistical Analysis

Most of the teachers under study are female, primarily in the age group 30-40; the education background of most is a non-social studies education major in teaching colleges and universities; the number of years teaching and number of years teaching social studies for most are between 6-10 years and under 5 years; in terms of occupation, most are purely homeroom teachers; most work in schools with between 25-48 classes.

#### B. Analysis of Elementary School Teachers’ Financial Literacy

In the 31 items on financial literacy questionnaire, the top three items with the highest scores are “I know that financial management tools with higher yield would also have higher risks,” “I know about different savings methods, such as: certificates of deposit, small savings for lump sum withdrawal, and others,” and “I understand how to maximize the value of money through comparative shopping.” The bottom three items with the lowest scores are “I understand the meaning of the Wholesale Price Index published by the Directorate General of Budget, Accounting and Statistics,” “I understand the meaning of monitoring indicators published monthly by the Council for Economic Planning And Development,” and “I understand the various financial management information in financial newspapers and magazines.”

#### C. Elementary School Teachers’ Financial Education Teaching

In the 28 items on financial education teaching questionnaire, the top three items with the highest scores are “Financial education can let students understand the

importance of increasing earnings and decreasing spending,” “Financial education is also a part of character education,” and “Financial education can help students adapt to an increasingly diverse living environment.” The bottom three items with the lowest scores are “Current elementary school textbooks are sufficient in increasing students’ financial literacy,” “I have the ability to develop suitable instructional cases for financial education,” and “I can use information technology to construct a sharing forum for financial education (i.e., class web page).”

**D. Results of Difference Analysis**

In exploring whether elementary school teachers with different demographic variables differ in terms of financial literacy, results of the *t*-test show that: “gender” reaches a significant difference level in “Financial planning and responsibility” and “Banking-related business,” and “school location” does not reach the level of significance in any dimension. Results of one-way ANOVA show that dimensions of “age” reaches the level of significant difference in “Banking-related business,” “Issues in economic policy,” “Tax and insurance planning,” and “Consumer finances”.

In “number of years teaching,” other than “Financial planning and responsibility” does not reach the level of significance, all other dimensions show a significant difference. “Occupation at school” shows a significant difference in “Issues in economic policy,” and other dimensions do not reach the level of significance. “School size” shows a significant difference in “Financial planning and responsibility” other dimensions do not reach the level of significance. “Highest degree earned,” “college major,” and “number of years teaching social studies” do not reach the level of significance in any dimension.

**E. Difference Analysis of Demographic Variables and Teachers’ Financial Education Teaching**

In exploring whether elementary school teachers with different demographic variables differ in terms of financial education, results of the *t*-test show that: “gender” reaches a significant difference level in “the importance of elementary school financial education,” and “school location” does not reach the level of significance in any dimension.

Results of one-way ANOVA show that dimensions of “age” reaches the level of significant difference in “accommodating financial education.” “Highest degree earned,” “college major,” “number of years teaching,” “number of years teaching social studies,” “occupation at school,” and “school size” do not reach the level of significance in any dimension of financial education.

**F. Results of Canonical Correlation Analysis**

TABLE I: RESULTS OF EIGENVALUES AND CANONICAL CORRELATIONS

Root No.	Eigenvalue	Percent	Cum. percent	Canonical correlation ( $\rho$ )	Square correlation ( $\rho^2$ )
1	0.684	90.033	90.033	0.637	0.406
2	0.069	9.119	99.152	0.255	0.065
3	0.006	0.848	100	0.080	0.006

In order to verify the relationship between financial

literacy and financial education, this study carried out canonical correlation analysis. Canonical correlation analysis is used to identify and measure the associations among two sets of variables. Table I shows the results of eigenvalues and canonical correlations.

TABLE II: RESULTS OF DIMENSION REDUCTION ANALYSIS

Roots	Wilks L.	F	Error DF	Significance of F
1 to 3	0.552	16.914	1301.56	0.000
2 to 3	0.930	3.447	922.00	0.000
3 to 3	0.994	0.744	468.00	0.562

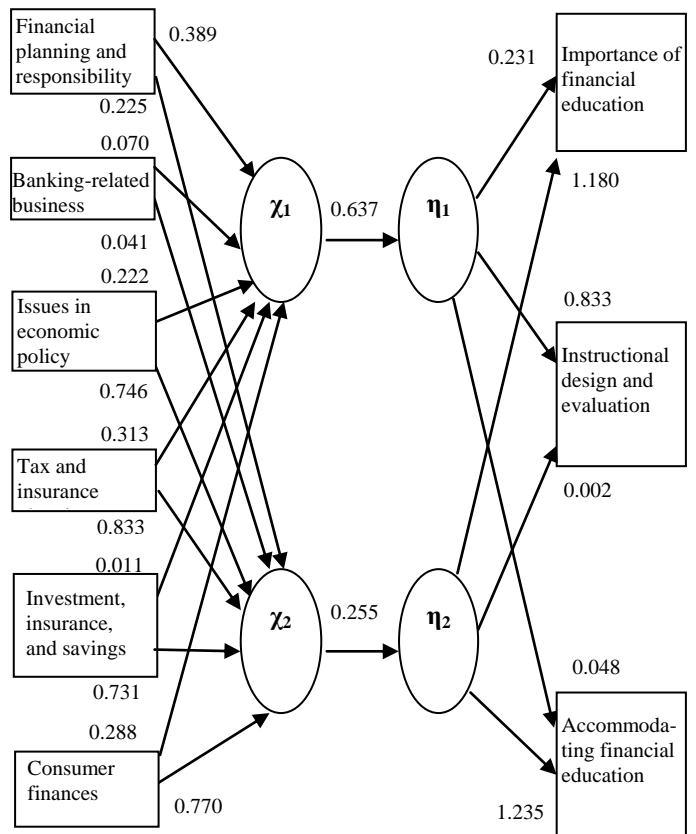


Fig. 1. Canonical correlation analysis and path coefficients.

The results of dimension reduction analysis, which are displayed in Table II, show that the predictor set’s four variables of financial literacy affect the criterion set’s three variables of financial education teaching through two pairs of canonical dimensions/factors that showed significant difference. More specifically, for this particular model there are three canonical dimensions of which only the first two are statistically significant. The first test of dimensions tests whether all three dimensions combined are significant (they are), the next test tests whether dimensions 2 and 3 combined are significant (they are). Finally, the last test tests whether dimension 3, by itself, is significant (it is not). Therefore dimensions 1 and 2 must each be significant.

As such, these two pairs of canonical dimensions can explain 67% and 7% of total variance in financial education teaching. The correlations were estimated through the path analysis, as plotted in Fig. 1. Since the predictor set and criterion set have the same canonical component loading signs, the null hypothesis is thus supported.

## V. CONCLUSIONS

This paper assumes that the effectiveness of financial education delivered by teachers may be affected by the extent of their personal financial literacy. Teachers' own lack of financial literacy would inhibit their teaching financial education in the classroom. Using data from a sample of Taiwanese elementary school teachers, this paper examines the impact of financial literacy of teachers on their financial education teaching in schools.

This study used the two methods of literature analysis and questionnaire surveys, with public elementary school teachers in Taipei City and Yunlin County as research subjects for analysis. In addition, in view of the fact that current literature in Taiwan has not compared the urban-rural differences in this research issue, this study should be able to supplement this gap in the literature.

Using descriptive statistics, factor analysis, validity analysis, reliability analysis, *t*-test, one-way ANOVA, and canonical correlation analysis, the empirical results showed that there is a positive correlation between teachers' financial literacy and their financial education teaching, which means that the higher financial literacy of elementary school teachers, the better construct in their financial education teaching in the classroom. These results can add to work in this area and can serve as a reference for later policies established by the government.

Furthermore, this study found that elementary school teachers, as a group, show medium-high levels of financial literacy, with the highest score in "Investment, insurance, and savings." Teachers generally believe that current elementary school textbooks cannot cultivate sufficient financial management knowledge in elementary school students, suggesting the unsuitability of financial education curricular materials for elementary school teachers.

Finally, the results showed that elementary school teachers did not demonstrate significant differences in "highest degree earned," "college major," "number of years teaching social studies," or "school location" in terms of financial literacy as well as financial education.

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