

การพัฒนาโปรแกรมการศึกษานอกระบบโรงเรียนเพื่อส่งเสริมความรู้ ความเข้าใจและทักษะในการจัดการการเงินส่วนบุคคลสำหรับผู้ใหญ่วัยกลางคน

The Development of A Program to Enhance Personal Financial Management Knowledge, Understanding, and Skills for Middle-Aged Adults

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บทคัดย่อ

การพัฒนาโปรแกรมการศึกษานอกระบบโรงเรียนเพื่อส่งเสริมความรู้ ความเข้าใจและทักษะในการจัดการการเงินส่วนบุคคลสำหรับผู้ใหญ่วัยกลางคนมีวัตถุประสงค์ ๔ ประการเพื่อ ๑) ศึกษาสภาพ ปัจจุบัน และความต้องการการเรียนรู้การจัดการการเงินส่วนบุคคลของผู้ใหญ่วัยกลางคน ๒) พัฒนาโปรแกรมการศึกษานอกระบบโรงเรียนเพื่อส่งเสริมความรู้ ความเข้าใจและทักษะในการจัดการการเงินส่วนบุคคลสำหรับผู้ใหญ่วัยกลางคน ๓) ศึกษาผลของการใช้โปรแกรมที่พัฒนาขึ้น และ ๔) วิเคราะห์ปัจจัยที่ส่งผลต่อความสำเร็จและอุปสรรคต่อการใช้โปรแกรมที่พัฒนาขึ้น

ผลของการวิจัยเป็นดังนี้ ๑) ด้านสภาพ ปัจจุบัน และความต้องการการเรียนรู้ พบว่า กลุ่มตัวอย่างส่วนใหญ่เป็นผู้มีรายได้น้อย มีปัจจุบันมีเงินไม่พอออม ไม่จดบันทึกค่าใช้จ่ายไม่สามารถวิเคราะห์ปัจจุบันการเงินของตนเองได้และขาดความรู้ความเข้าใจและทักษะในการใช้เครื่องมือในการวางแผนการเงิน กลุ่มตัวอย่างต้องการเรียนรู้เนื้อหาในด้านการจัดการเงินสดไม่ให้ขาดมือในระดับมากที่สุด และเรื่องการวางแผนการเงินในระดับมาก และมีความต้องการกิจกรรมการเรียนรู้ด้านการจัดการเงินสดไม่ขาดมือมากกว่าด้านอื่นๆ ลดคล่องกันเนื้อหาการเรียนรู้ที่กลุ่มตัวอย่างต้องการ ๒) โปรแกรมที่พัฒนาขึ้นมี ๑ หน่วยเรียนรู้โดยดำเนินกิจกรรมด้วยกระบวนการ “จัด-ชุดโดย-เร้าใจ-ใส่คุณค่า” ประกอบด้วยกิจกรรมเรียนรู้ในชั้นเรียน ๕๙ ชั่วโมง และกิจกรรมนอกชั้นเรียน ๕๙ ชั่วโมง รวม ๑๐๘ ชั่วโมง และกิจกรรมค้นคว้าทั่วไป ๕ กิจกรรม ๓) ผลการทดลองใช้โปรแกรมที่พัฒนาขึ้นพบว่า โปรแกรมฯ ส่งเสริมให้ผู้เรียนมีความรู้ความเข้าใจและทักษะในการจัดการการเงินส่วนบุคคลได้จริง คะแนนการทดสอบของผู้เรียนหลังเรียนสูงกว่าคะแนนก่อนเรียนอย่างมีนัยสำคัญทางสถิติที่ระดับ .๐๕ ในทั้งสี่ด้านของการบริหารจัดการการเงินส่วนบุคคลและกลุ่มทดลองมีผลลัมพุทธิ์ทางการเรียนทั้งสี่ด้าน ๔) ผลวิจัยพบปัจจัยส่งเสริมในการนำโปรแกรมฯ ที่พัฒนาขึ้นไปใช้ คือ (๑) กลุ่มผู้เรียนที่มีประสบการณ์อันมีคุณค่า

(๒) การสร้างความแตกต่างด้านการสอนที่ตอบสนองผู้เรียนที่แตกต่าง (๓) กิจกรรมการเรียนรู้ตามกระบวนการ “จีจุด-ชุดโยงใย-เร้าใจ-ใส่คุณค่า” (๔) กิจกรรมค้นคว้าห่วงบทเรียนที่ส่งเสริมความทรงจำระยะยาว และ (๕) สภาพแวดล้อมที่สนับสนุนการเรียนรู้ ส่วนปัจจัยที่เป็นอุปสรรค คือ (๑) ข้อจำกัดด้านความสามารถในการคำนวณของผู้เรียน (๒) ความพัวพันของผู้เรียนที่ไม่เอื้อต่อการร่วมกิจกรรมค้นคว้าห่วงบทเรียนบางกิจกรรม (๓) ข้อจำกัดด้านเวลาที่ส่งผลต่อประสิทธิผลการเรียนรู้ของผู้เรียน

คำสำคัญ: การพัฒนาโปรแกรมการศึกษากnowledge ของระบบโรงเรียน / การจัดการการเงินส่วนบุคคล / รูปแบบการสอนตามแนวคิดของ GAGNE/รูปแบบการสอนโดยการสร้างความแตกต่าง

Abstract

The four objectives of the development of a non-formal education program to enhance personal financial management knowledge, understanding and skills for middle-aged adults are to: 1) study the stage, problem, and learning needs in personal financial management for middle-aged adults; 2) develop a non-formal education program to enhance the knowledge, understanding and skills of personal financial management for middle-aged adults; 3) study the results and effects of the non-formal education program that will enhance the knowledge, understanding and skills of personal financial management for middle-aged adults; and 4) analyze the success factors and obstacles that will affect the use of the developed program.

The findings of this study were as follows: 1) the majority of the sample had low income. They had no savings and had never recorded their expenditures. Therefore, almost all of them could not analyze their financial problems and they lacked the knowledge, understanding and skills in using financial planning tools. In terms of learning needs, the sample wanted to learn the sufficient cash management topic at the highest level and personal financial planning topic at a high level. Also, they wanted learning activities that were in line with their required contents, especially the sufficient cash management topic more than any other; 2) the developed program contains 11 learning units operated under the “Jeejud-Chudyongyai-Roajai-Saikunkha” process that comprised 49 hours of in-class activities and 51 hours outside-classroom activities for a total of 100 hours. There were also four additional brain-break activities; 3) the experimental results showed that the developed program was able to enhance the knowledge, understanding, and skills in personal financial management for learners. Subjects' posttest scores were significantly higher than the pretest scores at a .05 level of significance in all four areas of personal financial management.

The experimental group attained learning outcomes in all areas of personal financial management; 4) the success factors of program implementation were: (1) Valuable experiences of student group; (2) Making differential instruction to respond to learner diversity; (3) Learning activities according to the “Jeejud-Chudyongyai-Roajai-Saikunkha” process; (4) Brain-break activities that enhance long-term memory; and (5) Supportive learning environment. However, the obstacles of program implementation included: (1) Limitation of students’ mathematical ability; (2) Readiness of students in their supportive attitudes towards some brain-break activities; and (3) Time constraints influencing the learning outcomes of students.

KEYWORDS: NON-FORMAL EDUCATION PROGRAM DEVELOPMENT/PERSONAL FINANCIAL MANAGEMENT/GAGNE INSTRUCTION MODEL/DIFFERENTIATION INSTRUCTION MODEL

Introduction

Population ageing is increasingly being seen as a potential problem worldwide. It is perhaps most prevalent in highly developed countries. According to the United Nations, Asia, including Thailand, will experience the impact of population ageing in the near future. The growth rate of Thai senior citizens will double in the next two decades (Ranasinghe, 2013). A population survey of Thai families found that single and skipped generation families are increasing significantly (National Statistical Office Thailand, 2008). This change implies a decline in family support for the elderly. Health expenditure will increase and become a burden on public finances and household expenses. However, Thai government policy (Promoting and coordinating the National Committee for Senior Citizen) is aimed at elderly people being self-supporting. Middle-aged adults, approximately 40-60 years old, are moving towards an ageing society. One of the most

critical factors required to adapt to life as a senior citizen is financial preparation (Sriruen Kaewkungwal, 1991). Previous studies have shown that middle-aged Thais require knowledge about personal financial management (Archanya Rattana-Ubol *et al.*, 2009). In a world of economic volatility, personal financial management skills will perhaps be the most important competency required by middle-aged Thais.

Being middle-aged adult learners, they may not acquire new knowledge easily. Their daily lives’ constraints and obligations may leave them very little time to comprehend new ideas and concepts. Thus, learning through practice is necessary for middle-aged people who wish to acquire financial abilities and skills (Bunluh Siripanich, 2007). Nevertheless, the learning process can alter a person’s perspective and help in solving various life problems because it induces sustainable change in adult learners (Archanya Rattana-Ubol, 2008). The non-formal education

program, in particular, can be used to broaden the knowledge of finance management among middle-aged adults.

The complexity of personal financial management content requires learners to have skills in thinking, analyzing, and recognizing various types of content. Middle-aged adults also require a flexible instruction model which responds to the diversity among learners. Therefore, a program that integrates the Gagne Instruction Model with Advancing Differentiation (Cash, 2011) was developed for the current study. The Gagne Instruction Model focuses on developing the knowledge, understanding, and skills of adults, whereas the Differentiation Instruction Model provides a framework for an educator to create a qualitative curriculum that responds to diverse learners. The proposed program has been designed to foster knowledge and understanding as well as to provide practical experience. It also promotes learner autonomy and critical reasoning to enable participants to solve their own real personal financial management problems.

Objectives

1. To analyze the state, problems, and requirements of middle-aged adults with respect to the enhancement of their personal financial management knowledge, understanding, and skills.
2. To develop a non-formal education program to enhance the knowledge, understanding, and skills of middle-aged adults in

personal financial management.

3. To do a quasi-experimental study using the developed program.
4. To identify the program's success factors as well as any problems, obstacles, and possible remedies.

Methodology

The population of this research comprised middle-aged adult students who registered at non-formal education schools in Bangkok districts during the 2012 educational year. The study variables included the non-formal education program as an independent variable and middle-aged adults' knowledge, understanding, and skills in personal financial management as dependent variables. The researcher conducted a quasi-experiment with a One Group Pretest-Posttest design and analyzed the data using content analysis and descriptive statistics. There were 4 phases in the research design. The research tools, study samples, and data analysis methods in each phase of the study are summarized in Table 1. Every effort has been made to maintain the validity and reliability of all research tools.

Figure 1, which is based on a synthesis of the literature, shows the conceptual framework of this study. The framework integrates state-of-the-art knowledge from the areas of non-formal education programs, the Gagne Instruction Model, Advancing Differentiation concepts, and the E⁴ principle.

Figure 1: The conceptual framework of the program development to enhance the personal financial management knowledge, understanding and skills for middle-aged adults

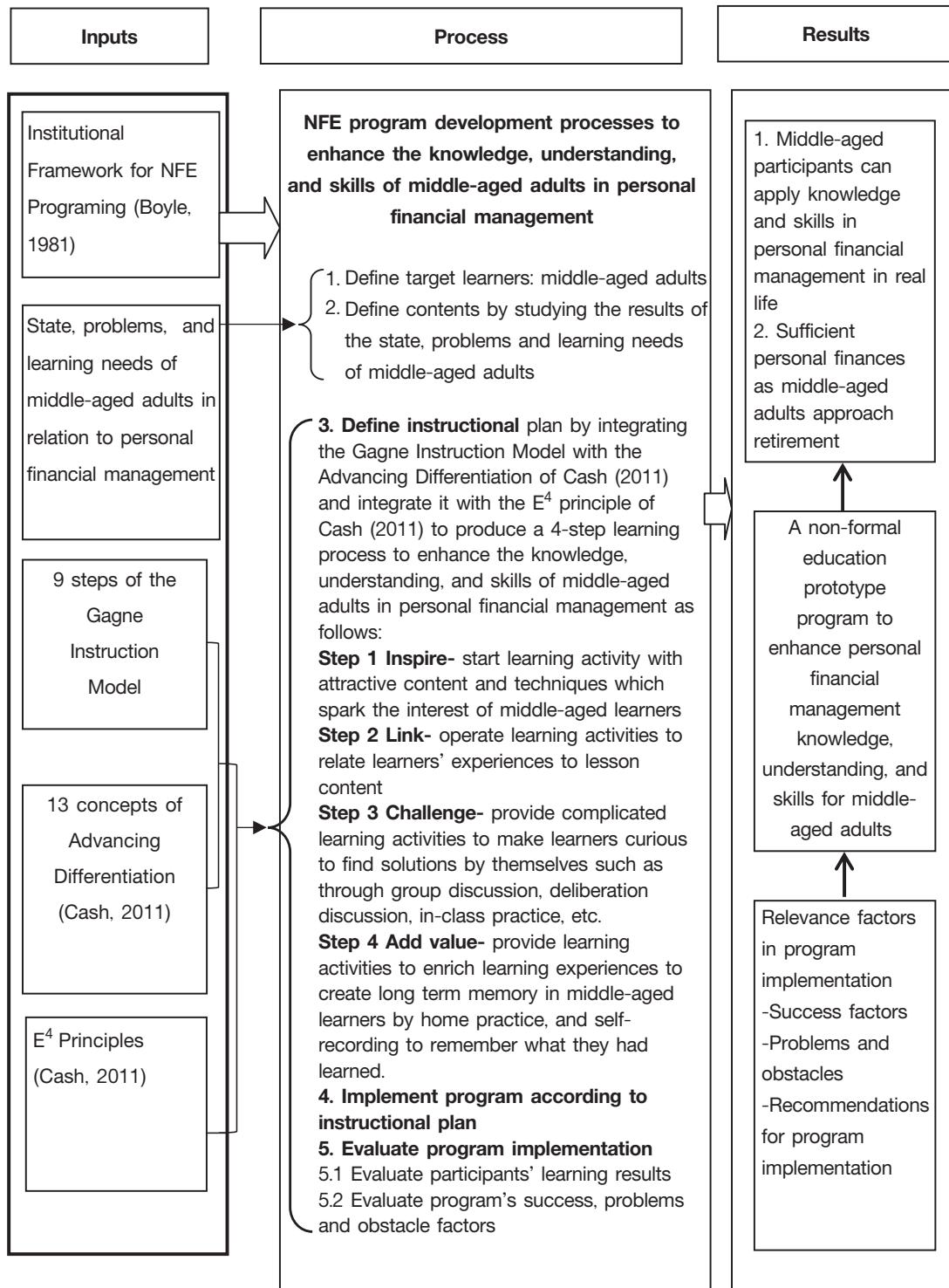


Table 1: Summary of Research Tool Development and Data Analysis Methods

Research Phase	Research Tool & Verification Data Collection Method	Tools Verification		Data Analysis Method
		Validity	Reliability	
Phase 1: Investigate the state, problems, and learning needs	<p><i>Research Tool # 1</i></p> <ul style="list-style-type: none"> - Test the interview questionnaire with 2 NFE teachers - Semi-structured Interview with 6 experienced educators <p><i>Research Tool # 2</i></p> <ul style="list-style-type: none"> - Test the questionnaire with 25 middle-aged student volunteers from the Buengkum NFE school (Sena 88 community) - Self-administered questionnaire collected from 372 students from 6 non-formal education school districts in the Bangkok area. 	IOC, Content Validity	Test	\bar{X} , SD Frequency Content Analysis
Phase 2: Design and develop the NFE program; Test and validate the data collection tools	<p><i>Research Tool # 3-1 to # 3-3</i></p> <ul style="list-style-type: none"> - NFE program (tool #3-1) design based on an institutional framework, using the Gagne instruction Model integrated with Advancing Differentiation and the E⁴ principle. The program contained 11 learning units of the curriculum including in-class exercises, home practice, a simulation game, interim brain activities, pre-assessment, formative assessment, and summative assessment techniques and tools. - Learning activity assessment (tool #3-2) - Interim activity assessment (tool #3-3) <p><i>Research Tool # 4-1 and 4-2 for Pretest-Posttest</i></p> <p><i>Research Tool # 5 for Program Assessment</i></p> <ul style="list-style-type: none"> - Test the NFE developed program and data collection tools with 25 middle-aged student volunteers from the Dindaeng NFE school. 	IOC, Content Validity	Try-out Cronbach's Alpha	\bar{X} , SD Content Analysis Reliability Test Discriminant Index Difficult Index
Phase 3: Implement the NFE programs	<p><i>Research Tool # 4-1 for Pretest</i></p> <p><i>Research tools 3-1 to 3-3 for the 100-hour program with learning activity assessment and interim activity assessment</i></p> <ul style="list-style-type: none"> - Implement with 25 middle-aged students from Klongtuey NFE school 			\bar{X} , SD Paired t-test Content Analysis
Phase 4: NFE program assessment	<p><i>Research Tool # 4-2 for Posttest</i></p> <p><i>Research Tool # 5 for Program Assessment</i></p> <ul style="list-style-type: none"> - 25 experimental subjects as in Phase 3 			\bar{X} , SD Paired t-test Frequency Content Analysis

Results

The study report is organized according to the four research objectives. Since the third and the fourth objectives were based on the analyses of the same experimental subjects, the two objectives will be combined into one.

(1) Investigate the State, Problems, and Learning Needs: The general profile of the 372 middle-aged adults who answered the self-administered questionnaires shows that the majority of them (68.99%) are employees; almost one third (30.48%) have monthly incomes from 9,000 to 15,000 Baht, a quarter (25.94%) have monthly income of less than 9,000 Baht, while 16.31% earned over 15,000 Baht. A little over half (53.74%) of these subjects rely solely on their main source of income; they do not have any part-time jobs to secure additional income. Also, about two-thirds of these adults have never tracked their personal or household expenditures (63.9%), have no skill in preparing cash-flow or financial plans (69.52%), and were in debt (69.52%). At least half of them had not spent their income on intoxicants (51.60%). With respect to personal financial knowledge and ability issues, more than half of the samples have chosen non-bank financial products (loans and saving). Their limited financial knowledge and were acquired from acquaintances and bank officers. A few of the middle-aged adults in this part of the

study indicated that their income exceeds expenses (8.82%). Surprisingly, 40.11% did not realize that they might have financial problems. Although the majority of the samples realized the importance of financial management, they had never used any financial management tools. This was because they thought they had insufficient knowledge and had not practiced and acquired sufficient skills.

Among many learning need areas that can enhance the middle-aged adults' knowledge, understanding, and skills in financial management, four areas stand out by their ratings as follows: a requirement at the highest level for "making ends meet", high level requirements for "personal financial planning" and "increasing knowledge and skills in personal financial management", and a medium level requirement for "selecting financial products".

From the proposed learning activities, the middle-aged samples rated debt management activities and risk management activities low on their list of needs. They were generally in different to the various types of learning activities specified in the questionnaires. However, they did specifically indicate that a debate activity was undesirable.

(2) Design and Develop a Non-formal Education Program: Based on the needs prioritization results from the Situational Analysis of Problems and Needs phase, a 100-hour non-formal education program was

developed with 49 hours of in-class and 51 hours of outside class activities. The program content consisted of 50 hours of financial management concepts and 50 hours of practice and skill improvement. The fifty hours of financial management concepts was divided into 3 segments: 28 hours for making ends meet, 13 hours for financial planning, and 9 hours for financial products selection.

The 11 learning units of the program curriculum were: introduction, personal household accounting, personal financial discipline, personal household budgeting, value-for-money spending, cash flow statement preparation, financial products: loans, saving, insurance investment, and appropriate financial product selection, personal financial targets, personal financial health examination, personal financial planning, and integrative financial planning. Designed learning activities consisted of in-class exercises, home practice, a simulation game, interim brain activities, pre-assessment, formative assessment, summative assessment techniques and tools, learning activity assessment, interim activity assessment, pre-test versus posttest, and program evaluation. Consequently, the program achievement was meticulously measured.

(3) Assessment of Program Implementation: Results from the program experiment showed that the participants' posttest scores were significantly higher than the pretest

scores at the .05 level of significance in all four areas of personal financial management. On the other hand, the experimental group attained a learning effectiveness index value of between 0.40-0.61 in all four areas of personal financial management.

As for learning activity assessment, the 5 most favorable activities were: 1) class-room practice; 2) the graphic organizer presentation; 3) role model; 4) the simulation game; and 5) the discussion with guest speakers.

The interim activities assessment showed that the "Resistant Band for Life" activity was the favorite brain-break activity followed by the "Yoga for Life" activity.

The above results demonstrated that the developed program was able to enhance the knowledge, understanding, and skills of middle-aged adults in personal financial management.

(4) Success Factors, Problems, and Obstacles in Program Implementation:

The success factors of program implementation were as follows: 1) Middle-aged learners' valuable experiences provoked fruitful class discussions; 2) Production of differential instructions to respond to learner diversity resulted in greater learning effectiveness for middle-aged learners; 3) Learning activities according to the "Jeejud-Chudyongyai-Roajai-Saikunkha" process scaffold learners to achieve their learning objectives; (4) Brain-break activities

helped middle-aged learners relax which enhanced long-term memory; and (5) the Mobile Library for this program supported the learning environment. Learners were attracted to a variety of financial books and therefore, they could prepare themselves for the next lesson more efficiently.

The obstacles to program implementation included: 1) Limitations in the students' mathematical ability affected the class scheduling; 2) The readiness of students to change certain beliefs and their unsupportive attitudes towards the "drinking cold water" brain-break activities; and 3) Time constraints influenced the leaning outcomes of the students.

The development of a program to enhance the knowledge, understanding, and skills of middle-aged adults in personal financial management was based on the 5 stages of the non-formal education program development of Boyle (1981). *Stage 1*: Examine the state, problems, and learning needs of target learners for personal financial management to determine their financial problems and learning needs in each area. *Stage 2 and 3*: Develop a non-formal education program based on the Stage 1 study results and the validation by experts. The differentiation instruction concept adds variety to the design of learning activities so that the learning aptitude and the proficiency of learners can be in dividually recognized.

Factors and alternatives for the differentiation of learners and instructors are considered part of the curriculum design. *Stage 4 and 5*: Conduct learning activities of the adjusted non-formal education program which is comprised of 11 learning units. The synthesis learning process (Inspire-Link-Challenge-Add value) that was used to conduct learning activities was reformulated as a new learning activity process called "Jeejud Chudyongyai-Raojai-Saikunkha" in Thai.

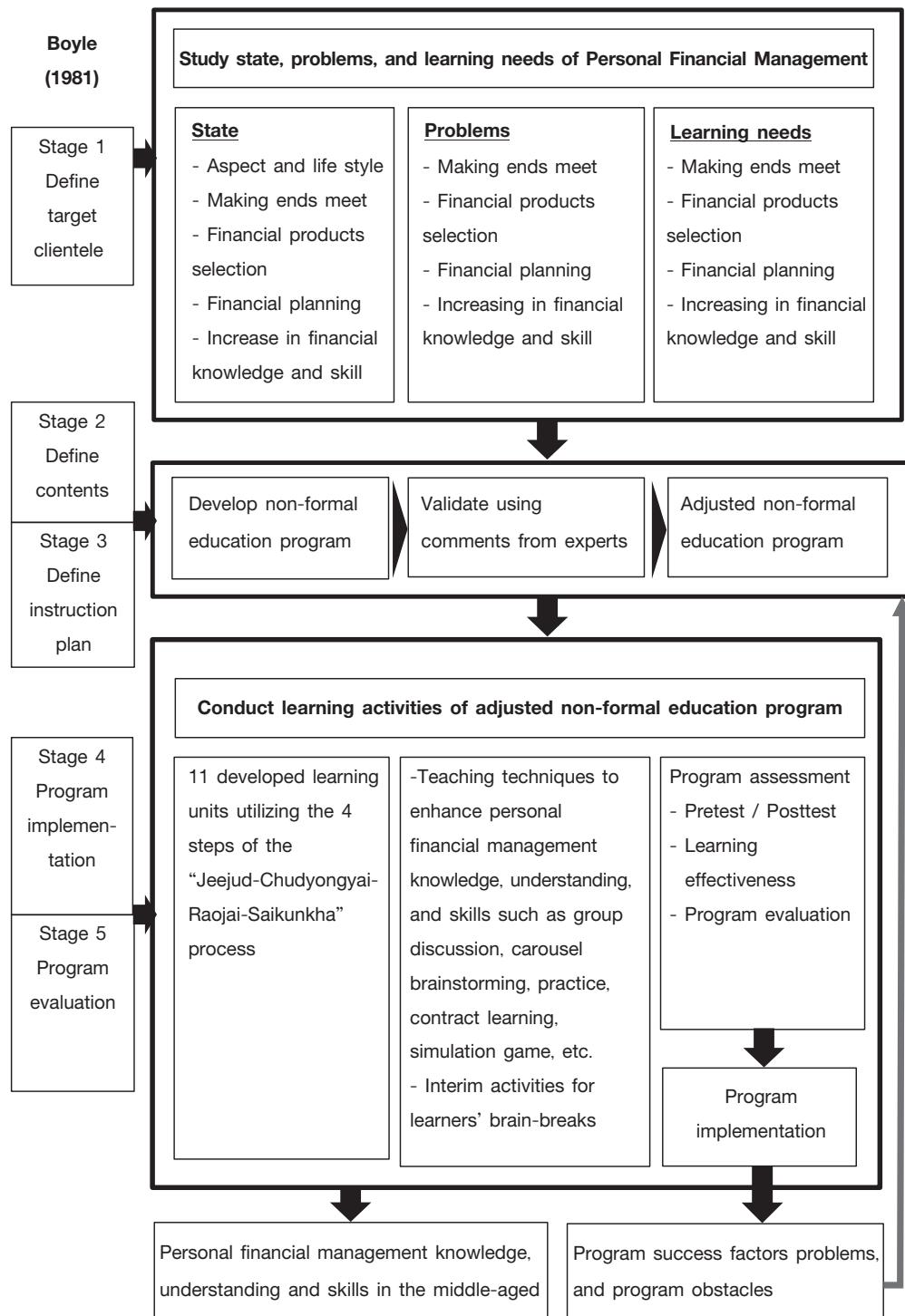
The details of the 4 sequential steps are as follows:

Step 1 Jeejud: The instructor has to start the learning activity with attractive content and techniques to spark the interest of middle-aged learners in personal financial problems. Some effective techniques are video presentations that can draw on the learners' deep emotions, and rational concept map presentations.

Step 2 Chudyongyai: The instructor has to conduct learning activities that relate the learners' financial experiences to lesson content so that they will be engaged with the class. The practical techniques are sharing learners' experiences, students' needs surveys, a simplified graphic organizer presentation, and a KIQ chart.

In summary, this research offers a program development model that integrates the Gagne Instruction Model with Advancing Differentiation as shown in Figure 2.

Figure 2: Developed non-formal education program to enhance the knowledge, understanding, and skills of Personal Financial Management for middle-aged adults



Step 3 Roajai: The instructor has to provide complicated learning activities to make learners curious about finding solutions by themselves; for example, the instructor can introduce the concept and then ask the students to come up with the answers by applying the concept they have just been taught. The teaching techniques that can be used are group discussions, deliberation discussions, games, and in-class practice.

Step 4 Saikunkha: The instructor has to add learning activities that enrich personal financial management learning experiences to create long term memories in middle-aged learners. The appropriate techniques are home practice, individual tasks, contract learning, and self-recording to remember what they learned from the I-Chart.

Appropriate teaching techniques of advancing differentiation were selected to deliver knowledge, understanding, and skills to middle-aged learners in personal financial management. These techniques included brain-break activities. The implemented program was assessed from the participants' learning results and their feedback. Program success factors, problems, and obstacles were analyzed and reported to improve the usefulness of the program.

In summary, the program was developed, tested, and found to be useful as a guide for non-formal educational curricula with similar requirements.

Discussion

The main objective of this research was to design and develop an effective non-formal education program to enhance the personal financial management knowledge, understanding and skills of middle-aged adults. The other three objectives as previously described collaborate with the main objective. The predicted results were that the program participants would gain knowledge, understanding and skills in personal financial management and that they would be able to apply the new knowledge and skills in real-life situations so that they could be more financially secure during their retirement.

First Objective: The middle-aged adults in the study were not interested in learning topics such as debt management and financial product selection since these topics did not match their real-life problems of making ends meet. This result, according to the andragogy concept, shows that the adults were only interested in learning what they could use in their lives (Knowles, 1980). Even though they did not have significant debt problems, they did not have much in the way of savings either. Information about the state, problems, and learning needs of middle-aged adults was used to design and develop a non-formal education program. In addition, the concept from the Gagne Instruction Model (Gagne, 1985) which focuses on providing knowledge, understanding,

and skills to learners was utilized in the design. The Differentiation Instruction Model and the E⁴ principle of instructional sequence (Cash, 2011) were also integrated seamlessly to create a viable curriculum for enhancing the personal financial management ability of adult learners.

Second Objective: To demonstrate how all the theories and methods fit together, Learning Unit 7 on “Financial products and financial product selection” will be discussed here. This unit was designed by lining up the foundation of 4 categories of financial products (loan, deposit, investment, and risk management) with the selection of financial product strategic content. The learning unit was split into 4 sequences of the “Jeejud-Chudyongyai-Raojai-Saikunkha” process.

In Stage 1 *Jeejud*, the lesson started with a classroom conversation about the learners’ current decision-making processes in selecting financial products. This learning activity attracted the program participants’ attention and made them curious about how to select financial products efficiently. The conversation content was designed according to the E⁴ principle of Cash (2011) to be effective for learners. Then the program participants were asked to engage voluntarily in joining the “read-write-pair-share” group activity of the financial product category that they were interested in during Stage 2 *Chudyongyai*. The activity

also addressed the Differentiation Instruction Model (Tomlinson, 2001) as learners were able to choose the concept based on their own interests. This, in turn, encouraged learners to bind to the lesson. This is consistent with andragogy theory which states that adults are only interested in what they can currently apply in their lives (Knowles, 1980).

Stage 3 Roajai was implemented by using a game of “think-tac-toe” with carousel brainstorm techniques that tied back to a previously utilized “read-write-pair-share” activity. The Differentiation Instructional Method was followed as it allowed learners to choose their own comfort zone for learning. Simple and meaningful games were utilized throughout the learning unit session.

From observation, it appeared that the majority of program participants were excited and happily learned several complex ideas through the carefully designed learning activities. It appeared that these activities had enhanced the learners’ knowledge and had given them the opportunity to practice recalling their memories of previously learnt content. This supports the suggestion of how to stimulate adults’ long-term memory (Gagne, 1985). To cater for *Stage 4 Saikunkha*, the program participants were asked to use the “I-Chart” tool to record their own learning content before they took the end of unit test. No participant was left behind by their colleagues even though he/she had

different background knowledge, dissimilar interests, or different levels of readiness. They decided what they had studied by themselves in a proactive way. The proposed instructional method is likely to avoid the lack of excitement in normal lectures. Furthermore, learners could summarize their learning experiences in their own writing. This is a value-added stage according to the E⁴ principle of Cash (2011).

Third Objective: The overall program appears to have been implemented successfully. The learners' posttest scores were significantly higher than their pretest scores. All participants participated actively and no one fell asleep during the session or showed signs of fatigue even during the most difficult of the long learning units. Some notable observations are discussed below.

The program evaluation showed that participants were interested in all learning units since the learning content aligned with their real life problems. These middle-aged individuals participated in a lively manner and exhibited curiosity about all learning activities. This is consistent with andragogical theory which states that adults become ready to learn something when the content to be learnt aligns with their real-life problems (Knowles, 1980).

The learning activities which were designed to serve diverse learners made participants very happy and their willingness

to learn increased. The concept allows learners to demonstrate their learning results based on their own diversity as well as providing freedom for learners to follow their own interests (Tomlinson, 2005). Two specific activities that support the Differentiation Institutional Model are as follows:

1) The *Bring happiness to the family with less money* activity. Participants were excited about working on the learning contract assignment. They looked forward to their peer's presentations as they could learn from one another. They were also enthusiastic about presenting their work using methods and skills of their own choice.

2) The *read-write-pair-share activity in Learning Unit 7*. This activity allowed program participants to join any of the 4 groups of the financial product category that they were interested in, and supported them so they could learn efficiently (Tomlinson, 2005). This was confirmed by the results of the posttest questions on this topic (#31, 54, and 55) as they indicated the highest improvement.

Besides the differentiation given to the learners, differentiation from the instructor can help learning improvement as well (Tomlinson, 2001). During the *pair-reading activities*, some participants felt bored. Therefore, the instructor team strategically intervened by suggesting that the pair focus their discussion only on the most important issues in the reading. The participants

became more alert and were able to accomplish their assigned task. This evidence is consistent with the advancing differentiation concept that learners at different levels of readiness may require the instructor's assistance to build a bridge for them to move beyond deficits (Cash, 2011).

The research results also demonstrated the importance of "Jeejud-Chudyongyai-Raojai-Saikunkha" sequences. Participants indicated in the assessment of the learning activity that the opening video clip "Cycle of Life" had brought home to them their own individual situations. They realized the importance of learning personal financial management. The participants rapidly became engaged with the lesson since they realized that financial planning was an important issue for their future. The video clip jump-started their Jeejud and Chudyongyai stages.

During the experiment, the program participants indicated that the leak pot activity was constantly in their thoughts. Learners were able to remember how expenses were categorized as fixed or variable expenses. The score improvement on this topic (question # 16) was one of the highest. The results also showed that distinctive activities had attracted middle-aged adult learners and had overcome their brain fatigue. In addition, it also confirmed the proposition of the Raojai stage of the "Jeejud-Chudyongyai-Raojai-Saikunkha" process.

Note that the formative assessment and the I-Chart recording at the end of each learning unit scaffold program were excellent tools for adding value to each learning unit. Participants were able to clarify their understanding of complex content before they confidently moved on to the next learning unit. These activities gave learners a brain-break where they had time to think and to shift between learning activities (Cash, 2011).

Fourth Objective: The factors that positively affected the program implementation as well as the barriers are considered to be as follows:

- Positive use of interim activity. The participants appreciated the brain-break activities such as the Resistant Band for Life, Yoga for Life, and the Cross-lateral Brain. They believed that the interim activity helped them recover from fatigue. This phenomenon aligns with the principles of adult learning (Suwat Wattanawong, 2001).

- Supportive learning environments. The program's mobile library served as an attractive and useful resource for preparing participants for the next learning unit (Knowles, 1980).

- Negative beliefs of Thai middle-aged adults. "Drinking Cold Water" is prescribed as one technique in the neuroandragogy brain-stimulation activity that can increase a learner's neurons and memory (Wilson, 2006). However, some participants believed

that cold water was bad for health. This activity resulted in a negative attitude towards the research experiment, and consequently it could not be implemented effectively. Future program designers should be more sensitive to the activity selection for middle-aged adults. A careful selection of learning activities suitable for the learner's age and their contexts in the non-formal education context must be considered (Worarat Apinankul, 2008).

- Negative Mathematical Aptitude. The mathematical knowledge of the majority of the participants was weak. Therefore, using numbers and performing calculations were major challenges and obstacles to skill development for personal financial management ability, especially in the classroom setting. The time limitation also put pressure on the middle-aged participants when the class required calculation practice and numbers in simulation games. The educator should provide sufficient time for learners to master new material or complicated subjects (Suwat Wattanawong, 2001).

- Physical classroom design. The proposed program design is most effective when the classroom is set up in a wide, spacious, and open room to facilitate the use of diverse learning activities. However, due to bureaucracy, regulation and limited budgets, this factor might negatively affect the participant's learning ability.

Recommendations

The present research contributes to the non-formal education body of knowledge as it was carried out with solid theoretical foundations. The integration of the Gagne Instruction Model with the Differentiation Institution Method and the E⁴ principles (Cash, 2011) is new to the non-formal education literature. The prototype program can serve as a guide for non-formal education programs of this type. However, the following points must be taken into account in future programs:

1) *Utilization of the developed program.*

This model can be adapted and reused to develop other non-formal education programs for middle-aged learners. In addition, the program can be reused with diverse middle-aged learners. The Office of Non-Formal and Informal Education may consider running this program to educate their adult students. Prior to the program implementation, a program administrator must study the problems and needs of the target group and incorporate state-of-art content in the financial management lessons. Pre-registration should be used as tool to understand group learner needs. A pretest to evaluate the learners' calculation ability is essential for the success of the program. If the pretest results indicate that the learners' calculation ability is low, simpler content should be used. The needs assessment and the learner's profiles should

be carefully considered so that appropriate learning activities, program duration, and resource planning can be undertaken. Sensitivity to the learners' age bracket and their contexts is likely to make the learning activities more desirable for program participants (Worarat Apinankul, 2008).

2) *Administration of a non-formal education program.* Program administrator should consider the following factors in order to accomplish the program objectives:

- *Instructor and assistants:* The program administrator should provide sufficient instructors and assistants, based on the composition of the learner group, to be able to assist the learners in completing practice tasks and other learning activities.

- *Learning activities:* It is important to explain the objectives with clear procedures to the learners at the beginning of each activity.

- *Learning media:* Appropriate learning media should be selected to deliver content in the styles that are suitable for the learners.

- *Learning environments:* Classroom layout, space, and necessary facilities should be arranged so that learning activities can be performed without interruption.

- *Program scheduling:* The program administrator should understand the adult learners' time limitations. A longer program duration might be needed for weaker learners.

3) *Further research.* The present study created a prototype non-formal education program to enhance the personal financial management knowledge, understanding and skills of middle-aged adults. Extended research areas of the present research include the study of learning activities that would impact the most on learners' achievement, the development of a program to improve learners' financial management attitudes, and the development of a non-formal education program to enhance the personal financial management ability of other groups besides non-formal education learners.

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