Effectiveness of Non-Formal Education Program to Enhance Career Planning Abilities of Lower Secondary School Students

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Abstract

The 3Ds Career Planning Program is a sequential learning activity consisting of three stages: Diagnosing (8 activities), Designing (9 activities), and Doing (2 activities). These stages help students determine their future careers by exploring themselves and the world of careers, creating paths to desired jobs, and putting their plans into action. The purpose of this research is to study the effectiveness of this non-formal education program in improving lower secondary school students' career planning abilities at Angthong Patthamarot Witthayakhom School. Twenty lower secondary school students volunteered to join the program. The 3Ds career planning instruments, which included questionnaires, tests, and reflection notes, were used to collect data. The findings indicate that the 3Ds Career Planning Program effectively improves students' career planning abilities overall. Learning outcomes were higher than 80%, and the overall career planning ability level was significantly higher (Pre-M = 2.38, S.D. = 0.96; Post-M = 4.37, S.D = 0.64). Students' career planning journals showed three levels of planning and implementation abilities: high, medium, and low. Moreover, the journals provided insights into several areas of learning reflection towards career planning: awareness of the importance of career planning, benefits of career planning, career decision-making and plans, feelings of plan accomplishment, and application to daily life.

Keywords: non-formal education program, career planning, lower secondary school students

1. Introduction

Career planning and development is a lifelong and flexible cyclical process that begins early in a child's life as a vital life skill (Magnuson & Starr, 2000). It's a process that a person thoughtfully makes decision about their future life/career, i.e., it's an individual process in making self-assessment, career choices and opportunities' evaluation, action planning related to possibly desired career goals. The starting point in the career planning process begins when one is still a child and is in school, and career perception might be limited in this school-aged period. Planning and choosing the right career are the process determining the pattern of a person's life in the future which will lead to the well-being of their lives (Nordin & Seng, 2021; Meepan, Charungkaittikul, & Poosakaew, 2023). Youths (aged 11 to 17 years) often feel confused in career planning at this stage of transition from children to adolescents. They continuously experience doubts and are inconsistent in their career choices (Astuti et al., 2022). According to Career Development Theory of Super et al. (1996), early adolescence develops themeselve pertaining to career planning: increasing concern about the future, increasing autonomy and personal control, forming geniue motivation to succeed, and acquiring appropriate work attitudes and habits. Later at this life stage, their focus shifts to exploration, crystallization, specification, and implementation of career choices, and their occupational self-concept emerges involving personal abilities, interests, values, and choices which will lead to their future plan.

In Thailand, the education has been provided from elementary schools to higher educations for Thai youth in order to (a) prepare them to live their desirable and well-being lives as good citizen and (b) help them get ready to pursue their further education and careers, i.e., the education is preparation for occupation. According to National Education Act B.E. 2542 (1999) section 7, 23, and 27, Thai youth shall be provided learning process with education through formal, non-formal and informal approaches for enhancing the ability to earn a living, have self-reliance

and creativity, including acquire thirst for knowledge and capability of self-learning on a continuous basis. Furthermore, compulsory education, especially at the lower secondary school level (junior high school), aims to provide students with learning opportunities to explore themselves, their knowledge, abilities, and skills in pursuing future careers and the capability to lead happy lives (Ministry of Education, 2020).

This research is a continuation of a previous study aimed at evaluating the effectiveness of our program to enhance career planning abilities among lower secondary students in Thailand. In the first phase of our research, we conducted a comprehensive survey to assess the career planning abilities of lower secondary students across Thailand. The first phase focused on studying these abilities and conducting a needs assessment to identify the factors necessary for developing a targeted program to improve career planning skills. The insights gained from this initial phase have been instrumental in shaping the current study, which aims to measure the program's effectiveness in addressing these identified needs and enhancing career planning abilities among these students. The results revealed that students from a school in Angthong Province, located in the central part of Thailand, exhibited the lowest level of career planning ability compared to students from other schools nationwide.

Angthong Patthamarot Witthayakhom School is one of many public schools that provide education guidance service classes which take 50 minutes per week or little hours per one semester. However, guidance teachers at Angthong Patthamarot Witthayakhom School mentioned that career guidance is largely ignored in form of service, practice and professional training programs here (Suebsamut & Wanthanasorn, personal communication, September 3, 2022). This is accorded to the research of Department of Employment (2014, 2016) statistically shown that lower secondary school students, who are in the middle of making decision in further education and career path, never have the opportunities to attend career guidance (more than 50%) and never determine their purpose in life (31%). The lack of career guidance service at Angthong Patthamarot Witthayakhom School also accorded to the study of Meepan et al. (2023) that presented Thai students' needs of the career guidance program should be focused on self-discovery (52%), career plan designing (19.4%) and self-development for desired career (11.7%) respectively. It's also said that students who lack readiness and awareness of the importance of career planning and are uninvolved in career guidance or career education, might not have chance to rationally make the right decision for their futures.

To enhance the career planning abilities of students at Angthong Patthamarot Witthayakhom School, we designed a non-formal education program called 3Ds Career Planning, which was later implemented alongside the current mainstream education. We developed learning content and activities using the 3Ds Career Planning Process of Meepan et al. (2023). Specifically, 3Ds Career Planning is a dynamic cyclical process that combines three stages for developing a career plan for youth: (a) Diagnosing Stage, where students discover themselves and the world of careers; (b) Designing Stage, where they analyze themselves and potential careers to make plans for entering their chosen career; and (c) Doing Stage, where they put their plans into action and assess their progress. Additionally, the program employs an active and self-directed learning approach, which was integrated into 19 sequential learning activities.
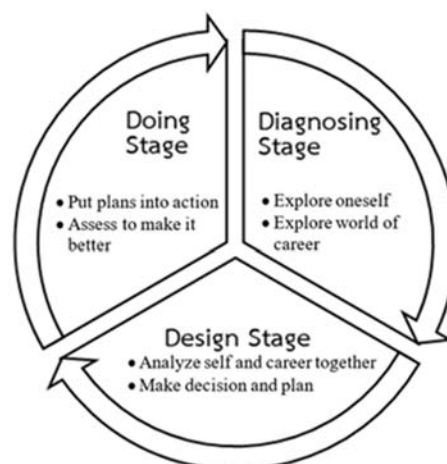

Figure1. 3Ds Career Planning Process (Meepan et al., 2023)

To evaluate the effectiveness of the 3Ds Career Planning program for youth at Angthong Patthamarot Witthayakhom School, we measured the students' knowledge, attitudes towards career planning, and their ability to plan independently. This assessment was conducted both before and after participating in the program. The primary hypothesis posited that students would demonstrate a significant improvement in their understanding of career planning concepts and processes, with scores exceeding 80% post-program. Additionally, we hypothesized that students would exhibit enhanced career planning abilities as evidenced by their performance in planning journals. The results confirmed these hypotheses, showing that students not only achieved higher scores in understanding career planning concepts but also demonstrated a marked improvement in their ability to develop and execute their career plans. This was reflected in their planning journals, where students provided more detailed and actionable career plans, indicating a substantial increase in their self-directed planning skills. These findings suggest that the 3Ds Career Planning program effectively enhances both the cognitive and practical aspects of career planning among youth.

Finally, we hope that this non-formal education program, 3Ds Career Planning, will be highly useful for guidance teachers in implementing career planning learning activities in career guidance classes. This, in turn, will contribute to the betterment of students' futures in various school contexts.

2. Method

This study aims to measure the effectiveness of a non-formal education program of 3Ds Career Planing to improve career plannings abilities of lower secondary school students at Angthong Patthamarot Witthayakhom School in Angthong Province, Thailand. We conducted experimental research using one group pretest-posttest design. The variables were (a) treatment variable—a non-formal educational program of 3Ds Career Planing and (b) output variables—effectiveness of the program measuring from career planning abilities combining knowledge, skills, and attitudes.

2.1 Research Design

This one-group pretest-posttest experimental research used both quantitative and qualitative approaches to collect data. A non-formal education program, 3Ds Career Planning, which included sequential learning activities, was implemented in a career guidance class. The first and second learning plans were conducted over two days, while the third learning plan was scheduled for a few weeks later. Volunteer students were assigned to take career planning tests and questionnaires before joining the program to assess pre-existing knowledge and skills. During the program, the students were instructed to take notes on their career plans, reflect on the learning activities, and express their satisfaction with the program. After completing the program, the students were assigned to take the career planning tests and questionnaires again to measure the outcomes of their career planning abilities.

2.2 Participants and Sampling Procedures

The subjects of this study were lower secondary school students from Mattayomsuksa 1 to 3 (junior high school level 7–9) from Angthong Patthamarot Witthayakhom School. The purposive sampling was applied to this research participant recruitment. It was open to those students who were keen on joining this career planning program. The selection was based on areas such as 1) age—from 12–15 years, 2) school level—Mattayomsuksa 1–3, 3) availability in attending the sequential learning activities, and 4) interest and commitment in self-growth particularly in career planning abilities. To ensure the quality of attendants and research procedures, we limited the number of participants to 20 people in order to run the program properly and effectively.

2.3 Research Instruments

1) A non-formal education program of 3Ds Career Planning

This program employed an active and self-directed learning approach combined with the 3Ds career planning process. Comprising 136 hours of sequential learning activities, the program was designed with three learning plans: Diagnosing Stage (8 activities), Designing Stage (9 activities), and Doing Stage (2 activities). The first and second learning plans each took two days (14 hours), while the third learning plan spanned several weeks (sub-activity 3.1: 120 hours; sub-activity 3.2: 2 hours). A variety of learning methods were used in this program, including small lectures, gaming, brainstorming, role-playing, group discussions, group presentations, and reflective writing. Additionally, aesthetic approaches such as drawing pictures, listening to music, and watching video clips were incorporated (see Appendix A).

2) 3Ds Career Planning Test

The 3Ds Career Planning Test was developed to measure knowledge before and after joing the program. Consisting of 20 items about knowledge of career planning, the test used four-multiple-choice design, and was tested for

validity and reliability before being disseminated. Five experts examined content validity and the item objective congruence (IOC) was 0.94. Later the test was tried out by 20 lower secondary school students who would not join the program. The KR-20 (Kuder-Richardson) was used to assess the test internal reliability which was 0.71 and the index of difficulty of this test was between 0.20 – 0.80. The score is quite good and acceptable, so the test can be used in this research.

3) 3Ds Career Planning Abilities Questionnaire

The 3Ds Career Planning Questionnaire was developed to measure the attitude towards the career planning abilities of students. Data collection techniques used Liket's scale, consisting of 5 indicators and 30 statements – 10 statements for each three stages of 3Ds Career Plan process measuring knowledge, skills, and attitudes. Five experts examined content validity and the IOC was 1.0, and 20 lower students who would not join the program tried out the questionnaire first; Cronbach's alpha score was 0.78. The score is excellent and acceptable, so the questionnaire can be used in this research.

4) 3Ds Career Planning Journal

The 3Ds Career Planning Journal was designed to qualitatively evaluate the career planning skills of students. This evaluation focused on various aspects, such as learning insights, emerging feelings, and viewpoints about career planning, including the ability to create and implement plans. The journal was reviewed by five experts to ensure content validity, achieving an IOC score of 1.0. This excellent score indicates that the reflection notes are both reliable and suitable for use in this research.

2.4 Data Collection

1) Program Preparation—We attended the meeting for research preparation, such as participant recruitment, role setting for research members in each learning activities, learning environments setting, learning resources and tools, etc.

2) Before Attending The Program—For the ethical consideration of this research involving human participants, we arranged the meeting to infom the students about research objectives, benefits for data contribution, data confidentiality, and absolute rights of withdrawal from research at any time. The students were free to sign the consent form of program attendance for program permission of data collections and data contributions. After that, the students were assigned to take the 3Ds Career Planning Test and 3Ds Career Planning Questionnaire at the beginning of program to assess the pre-existing knowledge and the ability in career planning.

3) During Attending The Program—Researchers run 136-hour-sequential learning activities consisting of three learning plans: Dianosing Stage (8 activities), Designing Stage (9 activities), and Doing Stage (2 activities), i.e, the first and the second learning plan took two days (14 hours), and the third learning plan took few weeks (sub-activity 3.1, 120 hours/ sub-activitiy 3.2, 2 hours). The students were assigned to take reflection notes during the time they attended all learning activities. For the third learning plan, the students would be assigned to put their plans into actions individually which will take few weeks, meanwhile they were able to consult with reserchers in case there is any inquiry via online platform, for example Line Openchat, Google Meet, or Zoom.

4) After Attending The Program—The students were informed to attend for the last activity of the third learning plan and were assigned to take 3Ds Career Planning Test and 3Ds Career Planning Questionnaire to evaluate learning outcomes after the program was done.

2.5 Data Analysis

1) Quantitative Approach—Descriptive statistics were used to describe the comparison of one group pretest-posttest level of career planning abilities, such as frequency, percentage, M (mean), S.D. (standard deviation), and t-test.

2) Qualitative Approach—Content analysis was performed on the data derived from students' career planning journals and reserachers' fieldnotes. The thematic categorizing method was used to label the analyzed data.

3. Results

The research findings were divided due to the research instruments as follows:

3.1 Basic Information of The Participants

Twenty students all agreed to sign the consent forms and join the program willingly. The average age of volunteer students was approximately 14 years old and most of the students were female (95%) and from Mattayomsuksa 3 (85%).

Table 1. Basic information of participants who joined a non-formal education program of 3Ds Career Planning.

Variable		n	%
Sex	Male	1	5
	Female	19	95
	Total	20	100
Age	13 years old	3	15
	14 years old	10	50
	15 years old	7	35
	Total	20	100
	M = 14.2, S.D. = 0.69		
Class Level	Mattayomsuksa 2 (Grade 8)	3	15
	Mattayomsuksa 3 (Grade 9)	17	85
	Total	20	100

3.2 Learning Outcomes of Career Planning

The comparison results came out as research hypothesis that the students would have average score higher than 80% after attending the program, from the score of 9.65 (48.25%) turning to 17.05 (85.25%) significantly (Table 2).

Table 2. Learning outcome from 3Ds Career Planning Test

Condition	n	M	S.D.	%	t-test	p-value
Scores before attending program	20	9.65	3.82	48.25	10.03	.00*
Scores after attending program	20	17.05	1.35	85.25		

Note. *P < 0.05.

3.3 Career Planning Abilities' Level

The comparison results of career planning abilities' level before and after attending the program came out as research hypothesis that the students' career planning abilities are higher after attending the program (from M = 2.38, S.D. = 0.96 turinng to M = 4.37, S.D = 0.64) significantly with t-test at 10.03 (Table 2). Before attending the program, the students' career planning abilities in over all aspects were at low level (M = 2.38), especially for sefl-perception of designing stage—believing in oneself of finding prospective future career (M = 1.85, S.D. = 0.81) and self-assessment of doing stage—evaluating oneself in actions towards planning (M = 1.95, S.D. = 0.94). After joining the program, the students' career planning abilities are at high and highest level. The prominent findings present that at diagnosing stage, the students gain more understanding about career exploration (M = 4.65, S.D. = 0.49), at designing stage, the students gain more self-confidence to share and discuss about their career plan with other people (M = 4.70, S.D. = 0.47), at doing stage, the students gain more understanding and positive attitude towards adapting career planning in daily life (M = 4.60, S.D. 0.60) and the benefits of putting plans into actions (M = 4.60, S.D. 0.60), and gain more positive self-perception towards pride (M = 4.80, S.D. = 0.41) and self-belief (M = 4.55, S.D. = 0.60) to accomplish the listed plan.

Table 3. The comparison results of career planning abilities' level before and after attending the program.

Statements	*n*	Before attending program			After attending program		
		M	S.D.	Level	M	S.D.	Level
1. Diagnosing Stage							
1.1 I believe that I can find and pursue desired career.	20	2.80	1.19	Medium	4.45	0.51	High
1.2 I know well what my knowledge and abilities are.	20	2.60	1.09	Medium	4.10	0.64	High
1.3 I know well what my skills and talents are.	20	2.50	1.00	Medium	4.30	0.66	High
1.4 I know well about my personality and characteristic.	20	2.55	1.05	Medium	4.15	0.59	High
1.5 I know well what I like, what my value or interest is.	20	2.60	1.23	Medium	4.25	0.72	High
1.6 I believe that there are many more interesting careers in this world waiting to be discovered.	20	3.15	0.81	Medium	4.65	0.49	Highest
1.7 I know and pay attention to my future desired career.	20	2.40	0.82	Low	4.25	0.64	High
1.8 I know well what knowledge, skills, or competencies each career needs.	20	2.40	0.75	Low	4.10	0.79	High
1.9 I know well what value, characteristic, or personality each career needs.	20	2.30	0.73	Low	3.80	0.60	High
1.10 I am aware that knowledge, skills, competencies, value,characteristic, personality, interest, or liking affecting the career chances and choices.	20	2.10	0.91	Low	4.45	0.60	High
Total	20	2.54	0.96	Low	4.45	0.63	High
2. Designing Stage							
2.1 I believe that I can make decision towards my future desired career.	20	2.35	0.81	Low	4.35	0.49	High
2.2 I believe that I discover desired career.	20	1.85	0.81	Low	4.00	0.65	High
2.3 I know what I want to become when I grow up and I can picture myself 5 – 10 years ahead.	20	2.20	0.69	Low	4.00	0.73	High
2.4 I am aware of the career decision I've made.	20	2.30	1.20	Low	3.95	0.83	High
2.5 I am aware that knowledge, skills, competencies, value, characteristic, personality, interest, or liking of mine can be great influence towards my career decision.	20	2.30	0.92	Low	4.35	0.67	High
2.6 I am aware of the importance of planning my future.	20	2.15	1.13	Low	4.35	0.88	High
2.7 I believe that I should plan my career and life early.	20	2.55	1.09	Medium	4.30	0.80	High
2.8 I can make both short-term and long-term plan to pursue my further education and desired career.	20	2.25	0.85	Low	4.10	0.79	High
2.9 I can determine the goal and resources for my career plan and self-development for pursuing desired career.	20	2.25	0.78	Low	3.90	0.72	High
2.10 I believe that sharing and discussing about career plan with the others, such as family, friends, or teachers will improve my career plan.	20	2.30	1.10	Low	4.70	0.47	Highest
Total	20	2.25	0.94	Low	4.20	0.70	High
3. Doing Stage							
3.1 I believe putting plan into actions is a good thing.	20	2.50	1.05	Medium	4.60	0.60	Highest
3.2 I feel proud of myself when I do plan.	20	2.60	1.23	Medium	4.80	0.41	Highest
3.3 I try my best to do everything as I plan	20	2.30	0.92	Low	4.55	0.60	Highest
3.4 I always develop myself, such as acquiring knowledge, sharpening my skills, learning auntomously, and many more to enter the path for prospective career.	20	2.80	1.01	Medium	4.40	0.68	High
3.5 I believe that an assessment of actions is necessary.	20	2.45	0.89	Low	4.40	0.50	High
3.6 I believe that I can assess myself of my actions towards the career plan I've made.	20	1.95	0.94	Low	4.15	0.81	High
3.7 I am happy to let another people assess my actions towards the career plan I've made.	20	2.00	0.97	Low	4.25	0.55	High
3.8 I can develop my career plan after the assessment	20	2.40	0.82	Low	4.35	0.67	High
3.9 I am aware that the career decision I've made can change in the future.	20	2.45	1.05	Low	4.50	0.76	High
3.10 I can apply this career planning process in daily life use to plan my future in many aspects of life.	20	2.25	1.02	Low	4.60	0.60	Highest
Total	20	2.37	0.99	Low	4.46	0.61	High

3.4 Students' Career Plans and Learning Reflection

In their 3Ds career planning journals, we categorized the students into three groups:

1)   High ability to plan (14 students): These students have practical and well-developed plans for their future education and careers and are fully committed to putting their plans into action.

2)   Medium ability to plan (4 students): These students have practical and well-developed plans primarily for

their education over the next few years and frequently take steps to implement their plans.

3)   Low ability to plan (2 students): These students are uncertain about their futures and do not want to rush their decisions. They have draft plans but are not serious about taking them into action.

Moreover, their journals revealed learning insights, emerging feelings, and viewpoints about career planning. After completing the content analysis, the study showed learning outcomes in the following themes:

3.4.1 Theme: The Awareness of Career Planning's Importance

Most students are aware of the importance of career planning. Their self-realizations regarding career planning emphasize the need to plan their future education and desired careers early. For instance, they understand that making timely and informed career choices and plans can minimize wasted time and resources in pursuing their prospective careers. Students expressed the importance of career planning as "sharpening my future" (Student No. 1), "finding oneself early to avoid wasting time" (Student No. 12), "well-planned preparation leading to the right choice of school and career" (Student No. 15), and "knowing how to improve myself to achieve my dream career" (Student No. 17).

3.4.2 Theme: The Benefits of Career Planning

Students' reflections on the benefits of career planning can be identified individually, such as increasing understanding of the career planning process, improving self-understanding, enhancing self-assessment, gaining clarity of self-perception, building self-confidence, making better career/study/life decisions, exploring the world of careers, broadening career perspectives, and connecting with friends and family through sharing and discussing their plans. Examples of these benefits include statements like: "I can discover careers I never knew about before and analyze myself to pursue my dream" (Student No. 4); "the opinions from others are valuable to help me improve myself" (Student No. 6); "I know myself better and I'm not afraid to dream big anymore" (Student No. 7); "I can explore interesting aspects of different careers. Each career has its own unique and special competencies" (Student No. 13); "this program helps me understand career planning, discover my personality, and understand my value" (Student No. 16); and "I benefit from career planning, especially for making decisions" (Student No. 20).

3.4.3 Theme: The Career Decision Making and Plans

After participating in the program, some students have made decisions regarding their future education and desired careers. However, others remain uncertain and have not yet settled on a specific career path but have developed plans to enhance their skills in areas of interest and pursue further education. Examples of these decisions and plans include: "I would like to continue in the science-math program and study at nursing college. I've planned to improve my mathematics studies and will take special weekend courses in math and English" (Student No. 3); "I aspire to become a lawyer. I will schedule reading time every Saturday and Sunday" (Student No. 9); "I aim to become a game caster and improve my skills in playing computer games to become an e-sport player. I'm currently saving to purchase a better PCU" (Student No. 18); and "I'm uncertain about becoming a novel writer because the future is uncertain, and my plans are flexible. However, I intend to enhance my writing skills by reading more and practicing writing" (Student No. 19).

3.4.4 Theme: The Feeling of Plan Accomplishment

During the few weeks of implementing their plans, all students completed their listed tasks and consulted with researchers through online platforms such as Line Openchat, Google Meet, or Zoom for any inquiries that arose. Many students expressed their joy and happiness in their reflective writing journals, as well as through their facial expressions and tone of voice observed during online meetings. They felt confident and proud of their successful actions and results, which they proudly shared with their families, friends, teachers, and research members. Their sentiments were captured in statements such as, "I feel good about myself that I can do what I have planned" (Student No. 2), "I am proud of myself. I don't think my family background is an obstacle. I know how to manage time both to help my parents and to improve my study" (Student No. 9), "I practice playing guitar and try to form a band with my friends. Hope we can be superstars one day. Yeah!" (Student No. 11), "Though my plan seemed hard to achieve, I gradually made it happen… I am so happy!" (Student No. 14), "I am getting better and better at casting games… And I know I rock!" (Student No. 18), and "I think I can become a great vet! I enjoy thinking about having a pet clinic one day" (Student No. 20).

3.4.5 Theme: The Daily Life Application

From students' reflection notes, the findings show that some of them can apply career planning in daily life. The students feel that planning is really essential in order to complete any task in life, from working on school assignments or projects to managing daily routines. They can design short-term and long-term plans that

appropriately fit their situations, times, and resources. Examples of daily life applications include statements like: "I help my parents by planning household chores with my sister. They don't have to do the chores because they work so hard for us already" (Student No. 9); "I'm applying the planning process to form my music band. This is a long-term project. I play guitar, and I have a friend who plays bass. We need to think about making it happen soon" (Student No. 11); "I plan to improve my English. Netflix can help me practice listening, reading, and writing skills" (Student No. 17); and "I need to improve my GPA, so I have to plan to study harder because I really need to get a scholarship" (Student No. 1).

4. Discussion

This experimental research was conducted to study the effectiveness of a non-formal education program of 3Ds Career Planning to enhance the career planning abilities of lower secondary school students. The findings showed that after attending the program, all students' career planning abilities significantly improved across all aspects: knowledge, skills, and attitudes. This aligns with numerous career learning programs that have been successful in enhancing career planning abilities among youth in various countries. For instance, Astuti et al. (2022) used a digital module to enhance career planning among junior high school students, Budiamin et al. (2019) utilized modeling techniques to increase student awareness of career options, Supapoj (2021) employed self-understanding activities to better prepare lower secondary school students for education and careers, Wang (2013) integrated Himalayan art into career planning classes to enhance students' self-awareness and career readiness, and Wongwal et al. (2021) implemented an integrative group counseling model to improve students' career decision-making. These studies collectively suggest that students who participate in career-focused programs are likely to improve their career abilities.

Not only can students' career planning ability in terms of knowledge—understanding concepts and processes of career planning—be observed from the pretest-posttest scores, but it is also evident in their reflective writing on its application to daily life. They adapt short-term or long-term plans for further education, self-improvement, and student projects. Moreover, students improved their career planning skills during the Diagnosing Stage and Designing Stage of the program. They learned to explore themselves and the world of careers, analyze themselves in relation to career choices based on possibilities and realities, and develop suitable plans to pursue their chosen paths. Kosine and Lewis (2008) emphasize the importance of the exploration process in career development, where individuals clarify their interests by narrowing choices, specify career options, and realize their choices through training, education, and work. However, Lindstrom et al. (2020) highlight that some rural or low-income schools lack resources for active career exploration experiences like field trips, college visits, or community internships. In contrast, the non-formal education program of 3Ds Career Planning offers career exploration opportunities through online and virtual platforms such as Google, YouTube, TikTok, etc. Additionally, former students who have graduated and now work serve as guest speakers, providing motivational speeches, study tips, and career advice.

Regarding the evaluation of career planning abilities in terms of attitudes and plan implement, the results demonstrate the program's effectiveness in enhancing students' attitudes to a higher level. This is evident in students' career planning journal, where positive attitudes towards the importance and benefits of career planning, career decision-making and planning, and the sense of accomplishment in planning are observed. Some students noted that the program helped them gain better self-awareness and overcome fears and hesitations in making career decisions. Additionally, students felt comfortable sharing their career plans with friends and family, considering external opinions valuable for assessing and refining their plans. According to Supapoj (2021), her study emphasized self-understanding activities that fostered collaboration among students, enabling them to share and learn from each other to enhance their self-exploration and career readiness. This finding aligns with Wongwal et al. (2021), who found that group counseling enhances students' career decision-making by facilitating learning from peers' diverse experiences and situations during career planning and decision-making processes.

5. Conclusion and Recommendations

This non-formal education program of 3Ds Career Planning, consisting of three stages: Diagnosing (8 activities), Designing (9 activities), and Doing (2 activities), aims to enhance adolescents' abilities to determine their future careers by exploring themselves and the world of careers, creating paths to desired jobs, and implementing their plans. We strongly believe that career planning learning is essential for students and should commence at a young age. Any career education, guidance service, or learning program should assess students' needs, integrate various appropriate learning approaches, and involve students collaboratively and actively in every step of the career planning process, enabling them to understand themselves and explore the world of careers. Once they have identified their desired career path, they can logically design the steps needed to enter that field. Educators and

teachers should act as facilitators, guiding and encouraging students to follow through with their career plans, and collaboratively assessing outcomes with them. For further research recommendations, the 3Ds Career Planning program should be implemented in primary school contexts, focusing on the Diagnosing Stage to establish a foundation of self-concept and career exploration.

Authors contributions

Miss Walainart Meepan led this research, responsible for study design, data collection, analysis, and manuscript drafting. Assoc. Prof. Suwithida Charungkaittikul and Dr. Rabkwan Poosakaew supervised the study and revised the manuscript. Miss Waree Suebsamut contributed to data collection and research management. All authors contributed equally to the study and approved the final manuscript. There were no special agreements concerning authorship beyond the contributions outlined above.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

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The Publication Ethics Committee of the Canadian Center of Science and Education.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

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Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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Appendix A. Table of 19 sequential learning activities in 3Ds Career Planning Program

3Ds Career Planning Learning Plan	Sequential Learning Process	Learning Activitiy	Learning Approach
1) Diagnosing Stage (7 hours) *** Each activity will take 45–60 mins due to classroom setting and condition	1) Readiness preparation: Building learning ambience about career planning	1.1 What is your future? *Objective*: To build awareness of students' life/career/future 1.2 The future me! *Objective*: To build awareness of students' life/career/future	• Listening to music or watching vdo clip about life/career/future • Pairing and sharing • Class reflection • Drawing picture representing oneself in the future • Pairing and sharing • Class reflection
	2) Exploring oneself with peers through group activity	1.3 What are my values? Objective: To Motivate students to know and understand themselves of what they value in life. 1.4 My personality is… *Objective*: To motivate students to discover their personality, including to guide them using free learning resources through online platform 1.5 Who I am? *Objective*: To motivate students to discover their personality, including to guide them using free learning resources through online platform	• Small lecture about value • Guessing game: Students writing their own values in paper and letting others guess • Class reflection • Small lecture about RIASEC (Holland, 1959) (Note 1) • Surfing through online RIASEC questionnaires • Group discussion about discovered personality • Class reflection • Small lecture about MBTI (The Myers & Briggs Foundation, 2023) (Note 2) • Surfing through online MBTI questionnaires • Group discussion about discovered personality • Class reflection
	Exploring world of career with peers through group activity	1.6 Career Role Play *Objective*: To motivate students to discover the career through aesthetic approach with joy 1.7 Strange jobs around the world *Objective*: To motivate students to discover the career through online platform 1.8 My family's jobs. *Objective*: To motivate students to discover the career around themselves	• Guessing game: Students role playing as assigned career in group and letting another group guess • Class reflection • Surfing the internet or social media about the strange or unseen jobs in group • Group discussion • Class reflection • Paring and sharing about family's or parents' occupations • Presenting in class • Class reflection
2) Designing Stage (7 hours) *** Each activity will take 45-60 mins due to classroom setting and condition	3) Analyzing oneself and career together through group activity and group discussion	2.1 Career Matching *Objective*: To encourage students to analyze themselves and career together based on possibility and reality 2.2 SWOT Analysis *Objective*: To encourage students to analyze themselves and career together based on possibility and reality	• Matching game: Students divided into groups and matching given clues and qualifications with jobs. • Class reflection • Small lecture about SWOT analysis • Writing down what students discovering on flipcharts • Group discussion of what career should match their SWOT • Class reflection
	4) Facilitating learners to make career decision choices	2.3 I find my choices! *Objective*: To encourage students to make career decision choices 2.4 Career Talk *Objective*: To encourage students to make career decision choices	• Small lecture about making decisions and flexibly possible career choice and plan • Presenting choices to the class and giving feedback • Class reflection • Inviting guest speaker who can be role model in career (can be any career theme) • Q&A with guest speaker • Class reflection
	5) Making plan to suit choices: short-term or long-term plan	2.5 Career Road trip *Objective*: To encourage students to create paths entering chosen career 2.6 Career Sailboat *Objective*: To encourage students to create paths entering chosen career 2.7 What should I do? *Objective*: To encourage students to create paths entering chosen career	• Drawing road map • Presenting in class and getting feedback • Class reflection • Drawing sailboat and writing things to be improved to reach career destination shore. • Presenting in class and getting feedback • Class reflection • Creating career plan suiting assigned case to entering chosen career in group • Presenting in class

3Ds Career Planning Learning Plan	Sequential Learning Process	Learning Activitiy	Learning Approach
			• Class reflection
	6) Sharing plan with peers or teachers and getting feedback to adjust plan	2.8 Be Goal Setter! *Objective*: To encourage students to create themselves with short-term plan to prepare entering chosen career	• Writing plan for few weeks/months, next semester, etc. • Pairing, sharing, and getting feedback • Class reflection
		2.9 My plan *Objective*: To encourage students to develop their career plan	• Writing long-term career plan • Pairing, sharing, and getting feedback to adjust plan • Class reflection
3) Doing Stage (7 hours) *** Activity 3.1 is freestyle learning based on individual plan which will take approximately 120 hours Activity 3.2 (2 hrs)	7) Putting plans into actions	3.1 Let's do the plan! *Objective*: To encourage students to do what they have listed on the plan and follow up through online platform	• Few-week-individual action on career plan • Self-reporting or consulting via Line openchat/ Zoom/ Google Meet etc. • Reflective writing on reflection note.
	8) Assessing the plan and self-reflecting (2 hours)	3.2 Assess to make it better! *Objective*: To facilitate students to evaluate themselves about the actions towards the plan and motivate students to adjust or keep workingh on the plan	• Group discusstion • Getting feedback • Class reflection

Notes

Note 1.Holland, J. L. (1959). A theory of vocational choice. Journal of Counseling Psychology, 6, 35–45.

Note 2. The Myers & Briggs Foundation. (2023). MBTI® Personality type. Retrieved from https://www.myersbriggs.org/

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