



# From Identity Exploration to Future Planning: Empowering Students for Success

## ABSTRACT

This Scholarship of Teaching of Learning study used a mixed methods approach in order to assess a pedagogical intervention to improve university students' future planning. A faculty member and an undergraduate student at a Taiwanese university co-created the intervention. The course emphasized intrinsic motivation, self-exploration, and career-planning competencies. Students reflected upon past learning experiences, evaluated strengths and weaknesses, and engaged with campus resources. Qualitative analysis indicated students' willingness to adopt effective learning strategies and found the intervention encouraged new techniques. However, procrastination and time-management issues hindered fully implementing relearning techniques. Weekly behavioral observation revealed that most students did not achieve a flow state in daily activities, only engaging deeply under exam pressure or in courses of personal interest. These observations prompted a teaching-strategy redesign. Analysis of university learning plans—students' personalized plans for academic goals, learning strategies, and career aspirations—demonstrated that students set clear goals, and personal interests and future career development motivated them. However, their time-management and resource-utilization skills were limited. Despite a willingness to invest effort, students struggled with time allocation and balancing academic, extracurricular, and personal responsibilities, highlighting the need to enhance action on plans. Interviews with industry experts revealed students' awareness of the importance of continuous learning, diverse competency development, and career planning flexibility. They sought foundational professional skills, hands-on experience, and contextualized learning opportunities. Pre- and post-test analyses showed nonsignificant improvements in exploration breadth and depth. Additionally, ruminative exploration decreased, suggesting that the intervention reduced uncertainty and encouraged future planning.

## KEYWORDS

future planning, identity exploration, liberal arts education, university student career development

## INTRODUCTION

This mixed methods project investigated the impact of a pedagogical intervention on students' self-reported study strategies and actual learning outcomes in a liberal arts general education career planning course. The intervention, collaboratively developed by a faculty member and an undergraduate student, aimed to provide students with tools to enhance their intrinsic motivation, promote self-exploration, and strengthen their career planning skills. Through reflective activities centered on past learning experiences and assessments of personal strengths and

weaknesses, the intervention encouraged students to actively engage with campus resources. The overarching goal was to empower students to effectively utilize these resources, foster self-directed learning, and apply design-thinking principles in order to create personalized academic plans. Identity exploration is defined as “the active process through which individuals examine different roles, values, and beliefs to form a coherent sense of self” (Luyckx, Goossens, and Soenens 2006). While typically viewed as a positive and adaptive component of identity formation during emerging adulthood, research has highlighted that intense or prolonged identity exploration may sometimes be associated with increased anxiety and depressive symptoms (Kidwell, Dunham, Bacho, Pastorino, and Portes 1995). As society evolves, Marcia (1966) suggests that identity exploration often extends beyond adolescence, with many individuals continuing to refine their career orientation and life goals in early adulthood. Arnett (2007) describes this period as “emerging adulthood,” a transitional phase characterized by exploration, instability, and self-discovery, during which individuals gradually establish stability, make commitments, and assume responsibilities. Successfully navigating this stage—by finding suitable careers and life directions—can significantly enhance overall well-being and long-term development.

In Taiwan, the 108 Curriculum Guidelines have introduced flexible learning programs and self-directed learning to cultivate students’ self-exploration abilities and lifelong learning competencies. According to the Ministry of Education, the design of flexible learning programs includes self-directed studies, research projects, and social engagement (Ministry of Education Republic of China 2019). All three allow students to delve deeply into topics of personal interest and engage in practical activities. These programs aim to develop critical thinking and problem-solving skills while integrating learning with real-life experiences (Ministry of Education Republic of China 2019). However, the effectiveness of such programs requires further empirical evaluation. Lacking effective guidance, many students may struggle to explore careers or enhance their skills effectively during their self-directed learning time (Sheu 2022). College students often face challenges related to inadequate career preparation, which stem primarily from insufficient opportunities for self-exploration and career planning. This disconnection ultimately creates a significant gap between academic knowledge and practical application (Chen and Chen 2021).

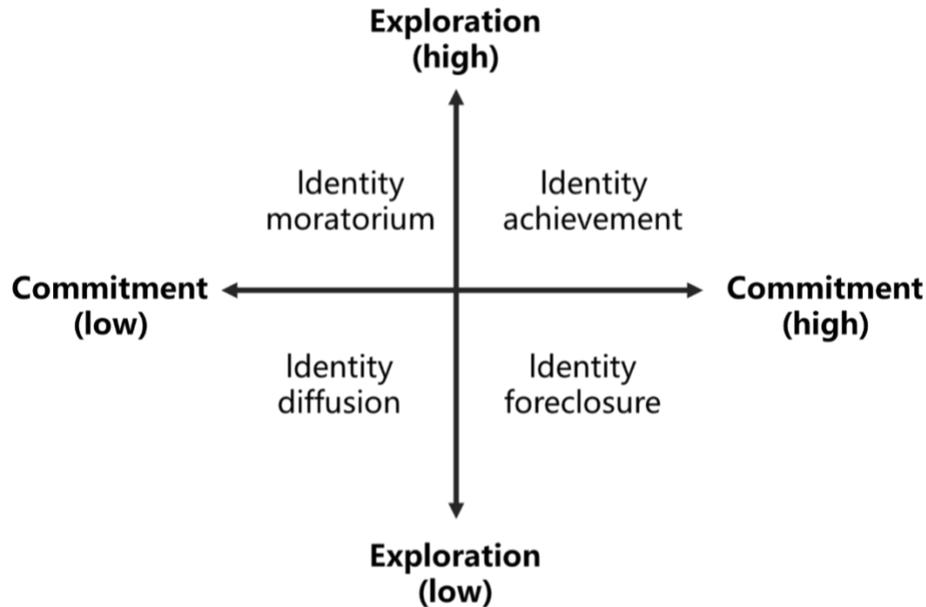
A 2024 study by the National Association of Colleges and Employers (NACE) found that while 84.6% of students surveyed said that they possessed a strong professional attitude, only 50% of surveyed employers agreed with this assessment. Similarly, in Taiwan, a survey commissioned by the Youth Development Administration of the Ministry of Education (2018) revealed that many university students struggle with bridging academic learning and career readiness. The study identified key concerns, including a lack of clarity on how a student’s major relates to future employment, studying without a clear sense of purpose, and an emphasis on theoretical coursework that has limited practical applications. These findings align with the challenges addressed by Taiwan’s 108 Curriculum Guidelines (Ministry of Education Republic of China 2019), which emphasize self-directed learning and flexible programs in order to help students develop career awareness and practical competencies. By integrating structured career exploration into university education, such initiatives may mitigate the disconnection between academic preparation and industry expectations. The above findings underscore the importance of addressing the gap between academic learning and the practical skills expected in the workplace. One critical reason for this disconnection is students’ limited self-awareness and lack of career exploration, both of which hinder their ability to secure jobs that align with their interests and strengths (Hsu 2024). This often results in underemployment or a mismatch between education and employment. Addressing this issue requires the implementation of courses that promote self-identity and exploration.

Identity exploration refers to the active process in which individuals evaluate various roles, values, and beliefs in order to develop a unified sense of self (Chen et al. 2021). This process often involves experimenting with different commitments in identity domains such as career, relationships, and ideology. James Marcia, building on Erik Erikson's theory, proposed four identity statuses (identity diffusion, foreclosure, moratorium, and achievement) that represent varying levels of exploration and commitment (Marcia 1966). Erikson (1968) conceptualized identity development as a lifelong process, with adolescence being a crucial but not necessarily final stage. This contrasts Arnett's (2007) emerging adulthood theory, which posits that identity exploration often extends beyond adolescence, particularly in modern societies. This dynamic process enables individuals to gain a deeper self-awareness and adapt to changing circumstances and challenges (Bosma and Kunnen 2001). Factors such as peers, family, and social environments, including schools, significantly shape identity, with positive relationships often providing opportunities for exploration (Berndt 2002). Moreover, identity exploration serves as a precursor to making meaningful life decisions and future plans (Hamed 2024). Hamed (2024) examined structured intervention programs' effectiveness at fostering identity development and career decision-making among students. Hamed's study highlighted that targeted interventions, such as guided self-reflection and experiential learning activities, play a crucial role in enhancing students' career adaptability and identity clarity. Based on Hamed (2024) and other relevant literature, the research examined established intervention strategies and highlighted how they aligned with or differed from our program. This includes a comparison of key components, such as the roles of mentorship, structured career exploration, and reflective practices, in identity development programs.

Crocetti, Rubini, Luyckx, and Meeus (2008), drawing from Marcia's (1966) identity status and Berzonsky's (1989) identity process theory, introduced a certainty-uncertainty model that classifies identity into three phases: commitment, in-depth exploration, and reconsideration of commitment (Figure 1).

1. **Commitment:** In this phase, individuals confidently make choices across different developmental dimensions, drawing upon their past experiences in order to inform the decisions.
2. **Exploration in depth:** In this phase, individuals actively describe or discuss their identity commitments during interactions with others. They demonstrate these choices in daily life while seeking additional information and feedback to refine their decisions.
3. **Reconsideration of commitment:** This phase occurs when individuals identify discrepancies between their commitments and external or internal contexts, prompting them to search for alternatives. Through this process, they compare and evaluate their initial decisions, ultimately modifying or abandoning them if necessary.

Figure 1. Identity status model (Marcia 1966)



Ruminative exploration involves persistent questioning of identity-related goals without reaching satisfactory answers (Chen et al. 2021). This behavior often results in feelings of uncertainty and self-doubt. If unresolved, ruminative exploration can impede identity development and hinder progress toward developing a cohesive sense of self (Chen et al. 2021). For university students, identity exploration is particularly relevant as they navigate academic pressures, social changes, and career planning (Hsu 2024). When transitioning from adolescence to adulthood, students engage in reflective processes to align their personal values with their professional aspirations (Erikson 1968). Social interactions play a critical role, with peers serving as both models and motivators in identity exploration (Luyckx, Schwartz, Goossens, Soenens, and Beyers 2008).

However, there are several challenges that must be addressed. Some students may struggle with identity exploration, leading to confusion or identity foreclosure, where choices are made based on external pressures rather than personal exploration (Chen et al. 2021). This limits the student's ability to formulate plans (Bosma et al. 2001; Marcia 1966). Conversely, those who actively engage in exploration through internships, extracurricular activities, and academic counseling are better prepared for future transitions (Hsu 2024). Programs that encourage students to reflect on their identity exploration, such as mentorship and life-planning courses, significantly enhance the ability to make informed decisions about students' careers and personal lives (Hamed 2024).

Regarding future trends, there is growing emphasis on integrating identity exploration with holistic educational practices. Encouraging students to explore multiple dimensions of identity—professional, social, and civic—equips them to thrive in complex and globalized environments. Universities are increasingly recognizing the importance of identity exploration with regards to fostering student well-being, resilience, and long-term success (Bosma et al. 2001; Hamed 2004; Peng 2024; Wu and Peng 2023).

This course incorporates design thinking into course design and teaching. Design thinking is a user-centered, iterative problem-solving approach that fosters creativity and innovation via structured stages. Choi, Kim, and Kim (2024) define it as an experiential, problem-based method that

enhances divergent thinking, creative self-efficacy, and collaboration within higher education. In their study, they implemented a living lab urban regeneration idea camp, guiding students through problem recognition, idea exploration, creative prototyping, and feedback refinement. Similarly, Ní Shé, Farrell, Brunton, and Costello (2022) describe design thinking as an agile methodology that emphasizes empathy and iterative design, structured into five stages: empathize, define, ideate, prototype, and test. This process enables deeper user understanding, creative brainstorming, and continuous improvement through prototyping and feedback. Both studies highlight the effectiveness of design thinking in enhancing learning experiences, developing problem-solving skills, and promoting creativity in educational settings.

These insights, grounded in Marcia's (1966) identity status theory and subsequent research on identity formation within academic contexts, emphasize the importance of fostering both exploration and commitment among students. By integrating identity development with future planning, universities can equip students to achieve academic and personal success. This study aimed to integrate design thinking pedagogy into the "Designing Your Life" career planning course. By utilizing tools for self-awareness and self-exploration, the course enabled university students to reflect on their past learning experiences, assess their strengths and areas for growth, and strategically utilize available resources. The university structured the course to enhance students' intrinsic motivation for self-directed learning by equipping them with strategies to optimize these resources. Furthermore, findings from career interviews indicated that the course encouraged students to develop structured learning plans and cultivate proactive approaches toward their academic and professional growth.

### **Research questions**

This project investigated four specific questions:

1. What were the baseline levels of identity exploration among university students, and how did these levels evolve after participating in the identity exploration course?
2. How did students systematically identify and resolve misalignments between their weekly behaviors, self-reflections, and long-term goals through structured self-observation?
3. In what ways did participation in an identity exploration course influence students' learning motivation, capacity for personalized learning plan development, and readiness for future career planning?
4. How did career interviews contribute to enhancing students' self-exploration and deepening their understanding of their intended professional fields?

## **METHODS**

### **Participant selection**

The National Kaohsiung University of Science and Technology Institutional Review Board (IRB) approved this study. Participants consisted of students enrolled in the Liberal Arts General Education Life Planning Course, taught by this paper's author during the spring semester of 2023. Recruitment occurred as a pre-test during the first week of class, prior to the introduction of any course content. I repeated recruitment fifteen weeks later, following the same procedure, to gather post-test data. I invited students to participate through two channels: (1) an announcement on the learning management system (LMS) containing a link to a pre-test questionnaire hosted on Qualtrics, and (2) an in-class verbal announcement directing students to the LMS for further instruction. Additionally, I distributed a hard-copy recruitment flyer with a QR code that linked to an online questionnaire during class. I informed students that their participation was entirely voluntary. I instructed students who

chose not to participate to use the time for other tasks and to submit a blank questionnaire at the end of the session in order to maintain anonymity regarding their participation decisions.

### **Sample and context**

I conducted this study at a national university of technology in southern Taiwan that has a total student population of approximately 28,000. Institutional data revealed a decreasing trend in the percentage of students entering the workforce immediately after graduation, with an average of approximately 75% over the past three years (National Kaohsiung University of Science and Technology, n.d.). Meanwhile, 25% of graduates either pursued further studies or remained unemployed. Participants were students enrolled in a liberal arts general education life planning course. Initially, forty-two students participated. However, I excluded incomplete responses, resulting in twenty-eight valid samples included in the data analysis. Among the valid participants, sixteen were male (57%) and twelve were female (43%).

### **Teaching procedure and measure**

I invited students to participate in the study on the first day of class, prior to the introduction of course content. Participation included completing the pretest for the identity exploration scale. The instructor began the course activities, including self-reflective exercises and behavior tracking, in the second week. Throughout the semester, students engaged in structured assignments, such as personal weekly behavior analyses, and began developing their learning plans. The instructor introduced the industry expert interview assignment later, allowing the students to apply classroom insights to real-world contexts. The course concluded with a posttest during the 15th week in order to measure changes in students' identity exploration and planning abilities over time.

The teaching methodology in this study employed five stages of design thinking in course design. In the empathy stage, students used reflective journals and self-exploration activities to better understand their goals and needs. The define stage focused on assisting students in setting learning and career goals, as well as planning resource utilization. During the ideation stage, students explored diverse pathways and fostered innovative ideas through peer and mentor interactions. In the prototype stage, students developed personalized university learning plans and refined them through workplace interviews. Finally, the test stage involved peer feedback and self-assessment to review and optimize plans. The overall course structure is presented in Table 1. Worksheets and post-class assignments supplemented course lectures, as detailed below:

1. Identity exploration scale (pre-test & post-test): Students complete a self-assessment to evaluate their personality traits and career interests at the beginning and end of the course.
2. MBTI psychological test: Students take the MBTI test to better understand their personality types and how these traits influence career choices.
3. Personal SWOT analysis: Students apply SWOT analysis to assess their strengths, weaknesses, opportunities, and threats regarding learning strategies and career planning.
4. View on work and life value worksheet: A guided worksheet where students reflect on their perspectives toward work and life balance, helping them align career goals with personal values.
5. Theme event discussion worksheet: Students participate in discussions about industry trends and future career prospects, using the worksheet to organize thoughts and predictions.
6. Letter of invitation and professional interview outline: Students draft invitation letters and prepare structured interview questions for industry professionals to gain career insights.

7. Individual college study plan: Students design a detailed university study plan, incorporating feedback to refine their academic and career trajectory.
8. Revised personal plan worksheet: Students use this worksheet to reflect on goal progress, make necessary adjustments, and develop actionable steps for future improvement.
9. Personal interviews with industry experts: Students conduct and document interviews with professionals, analyzing the responses to validate and refine their career plans.

Table 1. Design your life career planning course structure (36 hours)

Teaching stage	Learning objectives	Hours	Class study sheets	After-class assignments
Empathize	Identify the importance of life design and analyze personal personality traits to gain self-awareness.	2		Personally complete the identity exploration scale pre-test
	Analyze test results to gain insights into personal characteristics and engage in group discussions that foster self-discovery and reflection.	2	MBTI psychological test	
	Apply the SWOT tool to assess and analyze personal learning strategies, identifying key areas for improvement.	3	Personal SWOT analysis	
	Evaluate and reframe cognitive distortions to redefine personal and academic challenges.	2		
Define	Assess and develop strategies to balance life and career perspectives, enhancing overall life satisfaction.	3	View on work and life value	
	Demonstrate effective time management by setting, executing, and evaluating personal goals.	4		Personal behavior record and reflection for completing the week
Ideate	Examine historical trends to predict future influences and creatively explore potential career paths.	3.5	Theme event discussion worksheet	
	Design and refine an interview outline to collect insights on career development and professional growth.	3	Letter invitation and professional interview outline	
Prototype	Develop and present a structured university study plan, incorporating peer feedback for continuous improvement.	3.5		Individual completion of university study plan
Test	Evaluate personal goal achievement, adjust strategies, and refine plans based on review outcomes.	3	Revised personal plan worksheet	

Critically assess personal goal implementation using peer feedback and revise action plans accordingly.	3	Individual completion of the identity exploration scale post-test
Validate personal career plans through expert interviews, revise designs, and present findings for peer discussion.	4	Personal interviews with industry experts

### University student identity exploration scale

Students shared their perspectives via an online survey that used a five-point Likert scale inspired by the University Student Identity Exploration Scale, adapted from Chen et al. (2021). This scale measures three subscales: depth, breadth, and ruminative exploration. The depth exploration subscale includes six items (e.g., I regularly discuss my future decisions with others), the breadth exploration subscale consists of five items (e.g., I think a lot about how I see my future), and the ruminative exploration subscale comprises of five items (e.g., I worry about what I should do in the future). The reason for using the Chen et al. (2021) scale is based on ecological validity considerations. This scale was developed using a sample of university students in Taiwan, making it highly relevant to this study's population. Additionally, selecting an already validated scale/questionnaire is more economical and convenient. The Chen et al. (2021) measurement tool has demonstrated good reliability and validity. Cronbach's alpha values for the subscales were .89, .92, and .85, respectively. Students completed pre-tests during the first week of the course, while the instructor administered post-tests in the 15th week (before the course's conclusion in the 18th week). I analyzed data using SPSS software, with descriptive statistics and paired sample t-tests used to examine the status of students' self-exploration and the differences among the various types of identity exploration. In addition to quantitative tools, corresponding worksheets guided students through their exploration during the course.

### Personal weekly behavior and reflection

Personal weekly behavior and reflection (PWBR) activities required students to log their daily activities and reflect on how they allocated time across domains such as academia, social life, and leisure. This exercise enhanced students' self-awareness by helping them identify their habits and assess whether their routines aligned with academic and personal goals. By tracking behaviors, students discovered patterns, addressed inefficiencies, and set achievable improvement targets to foster self-regulated learning. Additionally, students evaluated whether these activities provided a sense of flow, which Csikszentmihalyi (1990) describes as the optimal state of deep engagement in an activity. The collected data included activity descriptions, levels of focus (rated from 1 to 10), physical and mental effort expended (rated from 1 to 10), and whether an activity facilitated a sense of flow. Behavioral logs encoded with unique student identifiers and activity serial numbers enabled the weekly analysis of students' routines.

### Personal learning plan

The personal learning plan (PLP) served as a strategic roadmap for students to chart their academic journeys throughout university. This required students to set clear academic goals, select courses, and identify extracurricular opportunities that aligned with their long-term career aspirations. Assignments encouraged students to incorporate internships, research projects, and

service-learning experiences, thereby connecting academic goals to professional growth. By bridging identity exploration with forward-looking planning, the PLP promotes effective career preparation. Students created detailed plans for elective courses, professional internships, extracurricular activities, and research opportunities. These plans were encoded with unique identifiers linking student IDs to annual goal serial numbers. The findings are summarized in the research results section, illustrating the current state of students' personal learning plans.

### **Industry expert interview**

The industry expert interview (IEI) assignment allowed students to engage with professionals from career fields related to their professional interests. Through structured interviews, the students gained insights into career pathways, industry challenges, and essential skills for success. This experiential learning activity enabled the students to explore potential career options and connect their academic efforts to real-world expectations. It also strengthened students' networking abilities and deepened their understanding of how identity exploration applies to professional contexts. For the assignment, students researched the backgrounds of industry experts, prepared interview questions, and conducted interviews. I encoded data from these interviews using student identifiers and interview report page numbers and integrated the findings into the research discussion, highlighting the implementation outcomes and key discoveries related to this assignment.

### **Research quality**

To ensure the trustworthiness of our qualitative analysis, I adhered to the Lincoln and Guba (1985) trustworthiness framework, which consists of the following criteria:

1. **Credibility:** To enhance the finding's authenticity, I used audio recordings to capture interview data verbatim. This ensured accurate representation of participants' responses and minimized data distortion.
2. **Dependability:** I employed direct quotations from the transcribed interviews to provide transparency and avoid subjective interpretation. Additionally, I cross-referenced the findings with relevant literature to validate our themes and interpretations.
3. **Confirmability:** The researcher maintained a neutral stance throughout the analysis process, ensuring that findings were derived from participants' experiences rather than researcher bias. To further enhance confirmability, I conducted peer debriefing, where an independent researcher reviewed the coding and interpretations to verify consistency and avoid overgeneralizations.

Regarding the coding process, I adopted an inductive thematic analysis approach (Braun and Clarke 2006). The initial step involved open coding, where emergent themes were identified through iterative reading of transcripts. Next, I used axial coding to refine and group related themes. To enhance reliability, two independent coders analyzed the data separately, followed by discussions to resolve discrepancies and establish inter-coder agreement.

## **RESULTS**

This study investigates how structured identity exploration interventions impact students' self-awareness, planning abilities, and career preparedness. The research themes guiding the study are explained as follows:

### Quantitative analysis: Personal weekly behavior and reflection

I converted the data from the students' weekly behavior observation logs into analyzable fields, such as activity name, level of focus, physical and mental effort expended, and flow state experience, in order to facilitate the analysis of weekly activity patterns. Among the 160 behaviors recorded by all the students, 11.88% activities were associated with a flow state (flow experiences/total behaviors = 19/160). This indicates that most of the students' daily activities did not lead to an optimal state of complete immersion and exhilaration, which characterizes a flow state. When the students experienced flow, their levels of focus and energy expenditure were notably higher than when they did not experience flow (see Table 2). Furthermore, a statistically significant positive correlation emerged between focus level and energy expenditure, with a Pearson's Correlation Coefficient at .44 ( $p < .001$ ), indicating a moderate relationship.

Table 2. Analysis of differences in focus level and energy expenditure between students' behavioral flow and non-behavioral flow

		n	Mean	Std. dev.	t	df	Sig. (2-tailed)
Focus level (score 1-10)	No flow	141	5.709	2.2125	-3.52**	158	.001
	In low	19	7.579	1.8353			
Energy expenditure (score 1-10)	No flow	141	5.521	2.6096	-3.61***	158	.000
	In flow	19	7.737	1.5931			

\*\* $p < .01$ , \*\*\* $p < .001$

Among the 160 daily behaviors recorded by students regarding their weekly lives, the 19 they perceived as flow-inducing activities primarily fell into three categories: learning and professional development (eight, 42.11%), social and interpersonal interactions (seven, 36.84%), and hobbies and recreational activities (four, 21.05%). Students demonstrated focused engagement and/or a sense of fulfillment through academic and internship-related tasks, in leisure activities that either involved learning new skills or simply enjoying everyday life, and through shared moments with friends and family. These activities not only facilitated immersion in the present moment but also contributed to their overall well-being. The following student reflections illustrate these patterns.

#### *Academic and professional development*

Some students reported deep engagement in coursework and skill-building activities. One student described a study session for an internship course as:

I originally planned to go to bed early the night before but ended up scrolling on my phone until 1 a.m. Fortunately, I slept well and felt acceptable the next morning. I started by listing 100 questions for the midterm of my internship course on boilers but only managed sixty-seven in an hour, which I had to piece together. After taking a break for lunch, I napped until 5 p.m., which was longer than planned. In the evening, I practiced piano, which I had not done for a week. Although I find it hard to become motivated to practice, I felt very satisfied during the process. Before I knew it, it was almost 9 p.m. (PWBR-5-28).

This reflection highlights the student's effort in balancing academic responsibilities with personal interests, demonstrating how structured engagement fosters both discipline and satisfaction.

*Personal well-being and fitness*

Others emphasized activities that contributed to their physical and mental health. One student noted, “Today, I focused on fitness and mental well-being. I completed a challenging workout that left me physically tired but mentally rejuvenated” (PWBR-7-44). This statement suggests that physical activity was not only a source of exertion but also a means of enhancing mental clarity and emotional stability.

*Social and recreational engagement*

Social activities also played a key role in students’ experiences of flow and fulfillment. One student shared:

Today was special because I went on a social trip with my peer counseling club friends. It was super fun! I visited the Kenting Amusement Area in southern Taiwan, which I had not visited for a long time. The guesthouses we chose allowed us to barbecue, play mahjong, and sign onto Facebook. Spending time with my clubmates was such joy! (PWBR-23-159).

This example underscores how social interactions can foster happiness and engagement, demonstrating how peer relationships contribute to students’ well-being. Overall, these reflections illustrate how students actively engage in various domains—academic, personal, and social—leading to experiences of flow and overall well-being.

The university students experienced flow in various contexts, ranging from deep concentration in academics to engaging in hobbies and social interactions that brought satisfaction and happiness. However, an analysis of students’ daily behavior records revealed that sixteen students (11.35%) reported difficulties in experiencing flow, primarily due to exam-related stress and a lack of intrinsic motivation for learning. One student shared their frustration with academic challenges:

A small quiz on engineering mathematics—looks like I will score zero again. Some things I have learned, but I forget how to solve them. Sometimes, I really admit how my brain can be so forgetful. In the afternoon, I took a mechanical quiz. I thought I did poorly, but it turned out that over twenty people did worse than me, so I do not feel so alone. However, the mechanics class is boring, and I do not know what use this subject has. 90% of the class was not paying attention . . . (PWBR-14-92)

This could highlight how academic pressure and the perceived irrelevance of course content may negatively impact students’ motivation and engagement, leading to disengagement from learning.

Many students, especially during exam periods, tend to focus solely on studying for specific courses rather than developing a broader appreciation for learning. This underscores the limitations of traditional classroom instruction, where rigid learning methods may result in burnout. In contrast, more interactive and applied teaching approaches may be more effective in sustaining students’ motivation and engagement.

Despite these challenges, some students found that self-monitoring and reflection helped them develop a more proactive learning attitude. One student described their weekly self-reflection process: “On the last day of this week, I took time to reflect on the experiences of the past week and make some improvement plans, which made me feel like I have grown, though it required some thought and energy” (PWBR-7-49). This demonstrates how structured self-observation can encourage

students to assess how they use their time, their personal growth, and any learning adjustments, ultimately fostering a sense of progress.

Analyzing students' behavioral records and reflections shows that both challenges and opportunities exist in supporting students' overall development. Educational institutions and instructors can leverage these insights to design teaching strategies that align more closely with students' needs, ultimately enhancing learning outcomes and promoting both academic and personal growth.

### **Qualitative analyses: Personal learning plan**

Based on the university learning plans provided by the students, their goals and strategies generally aligned with their annual execution plans. Introducing peer discussions in class proved effective in guiding personal reflection and challenging students to think critically. A qualitative analysis of the learning plans revealed three main focus areas:

1. **First and second years:** 86% of students (24) aim to enhance their “academic and professional development.”
2. **Third and fourth years:** 78% of students (22) focus on “career development and internship planning” before graduation, with the goal of securing their ideal job.

However, many students expressed uncertainty in their career choices, reflecting a phase of ruminative exploration. One second-year engineering student shared: “I feel lost when thinking about my future. There are too many options, and I don't know which one is right for me” (PLP-18-1). This quotation illustrates the cognitive overload and indecisiveness characteristic of ruminative exploration, a common phase in career decision-making, as noted in previous research on career indecision.

Following peer discussions in class, 64% of students (18) emphasized the importance of “social engagement and stable behavior practices,” particularly in areas like “improving foreign language skills” and “preparing for graduate school entrance exams.” For instance, many students in the first two years of university aim to strengthen their professional knowledge in fields like electrical, electronic, or power mechanical engineering while also preparing for graduate school entrance exams or certification tests. As students noted:

I personally evaluate that my English skills are poor, and my social skills need improvement. As other subjects become more challenging as I progress through the years, I need to employ better time management methods and maintain self-disciplined learning behaviors to overcome these challenges. (PLP-13-3, PLP-20-1, PLP-21-1, PLP-25-1).

This statement reflected students' self-awareness regarding areas of personal growth, such as language proficiency and time management, which are vital to their academic and career success.

Regarding the analysis of students' learning plans, students generally possess a clear understanding of their learning goals, particularly in areas related to personal interests and future career aspirations. However, time management and resource utilization skills are often limited when students execute these plans. Despite students' willingness to invest effort, they frequently struggle with effectively allocating time and integrating resources to balance academic, extracurricular, and personal pressures. The success of their plans depends largely on their self-monitoring and internal discipline. While motivation may initiate action, the key to achieving long-term goals lies in the stability and regularity of the actions they take.

*Industry expert interviews and reflection*

Based on industry expert interviews, several key insights emerged:

- 100% of students (28) agreed that “workplace success requires diverse abilities.”
- 96% of students (27) acknowledged the importance of “continuous learning and professional skills.”
- 86% of students (24) highlighted the need for “career planning and goal adjustment.”

Students accurately captured these insights, and the instructor encouraged them to develop their professional skills. However, for practical applications, further hands-on experience and contextualized learning are necessary. Companies prefer students who can effectively apply academic knowledge to real-world challenges. Key skills for success include interdisciplinary collaboration, communication, problem-solving, and self-learning (Ho and Chen 2022; Jackson 2012).

Several students reflected on how these interviews reshaped their understanding of workplace demands: “After entering the workforce, not only are professional skills important, but good interpersonal relationships and communication skills are also crucial. They have a profound impact on career success and development opportunities” (IEI-14-2, IEI-19-6, IEI-28-4). This statement highlights the critical role of interpersonal skills and teamwork in workplace success, especially within team-based work environments.

Another student shared: “In the workplace, tasks are often team-based. If interpersonal relationships are not well-maintained, it may affect task delegation and progress. Therefore, teamwork and mutual understanding are critical in management and work” (IEI-11-7, IEI-28-3). This underscores the importance of cultivating interpersonal relationships and effective communication within professional settings.

Reflecting on the impact of the interviews, one student noted:

This interview had a big impact on me. When choosing a suitable job, we need to consider future development and personal interests. It’s also essential to explore different job fields to truly determine the career path and direction we want to follow. (IEI-8-6, IEI-10-4).

This quote illustrates how career interviews helped students gain clarity regarding career decisions by considering long-term growth and personal alignment.

Finally, another student shared: “After this interview, I realized that once I set a goal, I should continuously assess my progress and adjust my plans. Listening to expert advice and adjusting strategies will make learning and career direction clearer” (IEI-22-4, IEI-26-5). This reflection highlights the importance of continual assessment and adaptation in career planning, reinforcing the value of expert guidance in shaping career trajectories.

### **Quantitative analysis: Students’ self-exploration status and pre- and post-test score differences after course implementation**

Regarding the current status of students’ self-exploration types, since the number of questions in each dimension was unequal, I used the average score of each question in each dimension to facilitate comparative exploration. As Table 3 shows, the pre-test average score for each question in “breadth exploration” was 3.97 points, with 3.74 points for “depth exploration,” and 3.65 points for “ruminative exploration.” Before the course implementation, the scores for all three dimensions of self-exploration ranged between “ordinary” and “consistent.” After course

implementation, a comparison of pre- and post-test scores indicated that students' ruminative exploration scores were higher in the post-test than in the pre-test. This indicates that, when assessing and evaluating their own exploration and development directions, university students began to constantly question their future development directions throughout the course. However, there was no significant difference between the pre- and post-test scores for depth and breadth exploration. Whereas ruminative exploration is a type of exploration that is more uncertain or undecided regarding its developmental direction, and its standard deviation is the highest among the three dimensions. This could indicate that after course implementation, university students continued to explore in an undefined direction.

Based on Cohen (1988), Cohen's *d* values of 0.2, 0.5, and 0.8 are conventionally interpreted as small, medium, and large effect sizes, respectively. In Table 3, the effect size for exploration in breadth is 0.127, indicating a small effect size and suggesting minimal change in students' breadth exploration after the intervention. The effect size for exploration in depth is 0.273, falling within the small to medium range and implying a modest increase in depth exploration. The effect size for ruminative exploration is 0.630, which represents a medium to large effect, indicating a more substantial increase in students' ruminative exploration.

These results suggest that while the intervention had a limited impact on breadth and depth exploration, it significantly influenced ruminative exploration, potentially indicating increased self-reflection and questioning of identity-related decisions post-intervention.

Table 3. Descriptive statistics, t-test results, and Cohen's *d* values (*N*=28)

	Mean	Std. dev.	Paired t-test		Cohen's <i>d</i>
			t	Sig (2-tailed)	
Exploration in breadth-pre	3.97	.53	.62	.537	0.127189
Exploration in depth-pre	3.74	.63	1.31	.192	0.272699
Exploration in depth-post	3.90	.54			
Ruminative exploration-pre	3.65	.75	2.94**	.004	0.629901
Ruminative exploration-post	4.11	.71			

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

## DISCUSSION

### Reflective critique

This study explored how the "Design Your Life" course helped college students integrate self-exploration, campus resources, and design thinking to enhance their future planning skills. Through structured self-observation, students were able to identify and resolve conflicts between their weekly behaviors, self-reflection, and long-term goals. By recording daily activities, students reflected on how they allocated their time across academics, social life, and leisure. This process improved students' self-awareness of personal habits and helped them determine whether their daily routines aligned with their personal and academic objectives. For instance, a weekly behavior observation log allowed students to record details such as their behavior, level of engagement, energy expenditure, and whether they experienced a flow state.

However, the practical applications of these insights faced several challenges. The main obstacle stemmed from students' experiences of learning pressure and a lack of perceived meaning in learning, making it challenging for them to translate their understanding of the importance of engagement into practice. Maurer and Shipp's (2021) study also confirmed this finding, suggesting that merely teaching students effective learning strategies may not be sufficient to change learning

behaviors. Even when provided with scaffolding and opportunities for repeated practice, students continued to struggle with overcoming procrastination as well as effectively planning and executing long-term learning strategies such as reviewing in a structured manner. Furthermore, Oreopoulos and Petronijevic (2019) found that many students spent a significant amount of time on social and recreational activities instead of dedicating free time to learning, even when they recognized that more effort was required to achieve better grades. Thus, this study identified the need to further explore students' motivational insights since their daily learning behaviors failed to generate feelings of engagement and meaning. This highlighted the dilemma educators faced in promoting effective learning strategies: How can instructors guide students to confront procrastination and cultivate time management and self-regulation skills to transform their knowledge of learning strategies into actionable practices?

While the post-test scores for breadth and depth exploration were higher than pre-test scores, there was no significant difference between the pre- and post-test scores for these types of self-exploration. This indicated that the students had already reached a certain level of broad and deep self-exploration. However, post-test scores for ruminative exploration were higher than pre-test scores, likely due to the psychological challenges involved in identity development. Individuals repeatedly thinking about identity-related issues without arriving at definitive answers characterized ruminative exploration. This increase may have reflected the fact that, during the course, students were exposed to diverse perspectives and self-exploration activities, prompting a deeper contemplation of their choices regarding identity and future plans. In the commitment-reflection phase of identity development, individuals became aware of the discrepancy between their environment and internal identity decisions, leading to ruminative thinking. This aligned with Crocetti et al. (2008) identity process theory, which highlighted the "reconsideration of commitment" stage. In this stage, individuals become aware of the gap between their internal identity and the external environment, leading them to question their current decisions and explore alternative choices. According to Luyckx et al. (2008), ruminative exploration typically increased when individuals encountered new or conflicting self-information, which was a normal psychological response that could trigger greater uncertainty. Marcia's (1966) identity status theory indicated that individuals might have experienced a "crisis" phase during exploration, in which the exploration of identity domains generated internal conflict and anxiety. Therefore, the course's encouragement for students to challenge their existing self-concept may have prompted them to reflect on their current commitments and choices, potentially leading to an increase in ruminative exploration scores. Crocetti's (2017) "confirmation-disconfirmation model" theory further emphasized the interaction between the depth of exploration and reflective commitment. When confronted with more information and choices, individuals may reconsider their past decisions, potentially resulting in increased ruminative exploration. Therefore, the significant increase in ruminative exploration post-test scores may not have been entirely negative; rather, it could have indicated that students were undergoing a more profound and complex exploration process.

The researcher reflected on the creation of a learning environment that triggered cognitive conflict by introducing diverse viewpoints and contrasting information. Since ruminative exploration often increased when individuals encountered new or conflicting self-information, educators could have designed course activities that exposed students to diverse perspectives, real-life workplace situations, and various life choices. This exposure could have prompted students to reflect on their values, beliefs, and goals, thus fostering ruminative exploration. For instance, students could have engaged in simulated debates, case studies, or role-playing exercises that allowed them to consider issues from different angles and challenge their preconceived notions.

### **Faculty reflection on co-inquiry**

During the review process, a reviewer suggested that I, as both a faculty researcher and instructor, reflect on the co-inquiry process. This reflection serves to balance student reflections and provide examples of how to work collaboratively and as partners with students. I am grateful for this opportunity, as it has deeply impressed upon me the importance of conducting SoTL projects in partnership with my students. As a course instructor with nearly a decade of teaching experience, I may have initially interpreted, analyzed, and organized students' responses to open-ended questions in a completely different way. My analysis might not have identified the same barriers that students would self-identify in adopting successive relearning. However, gaining insight into students' study habits proved to be one of the most significant findings of this study, with substantial implications for both the study and my teaching.

For instance, I might not have been able to discern the nuances between the “not open to change” and “time concerns” themes with the same level of detail as my undergraduate co-researcher. Through a collaborative inquiry process, I discovered that undergraduate students have limited time management and resource utilization skills. Although they are willing to exert effort, they often lack effective strategies for time allocation and resource utilization when faced with academic, extracurricular, and life pressures. This realization prompted me to reflect on how to guide students in managing their time more effectively, in setting goals, and in enhancing their learning motivation within the course design.

In the interviews with industry professionals, students expressed a desire for a more fundamental understanding of professional skills alongside a yearning for additional hands-on experience and contextualized learning. This realization has prompted me to recognize the need for pedagogical reform to better align with students' actual needs, to improve learning outcomes, and to foster personal growth. Additionally, the significant increase in students' ruminative exploration scores after course implementation indicates that they continued to experience considerable uncertainty and confusion while exploring future development paths. This serves as a reminder that educators must provide additional support and guidance to help students clarify their goals, overcome the psychological challenges encountered during the exploration process, and develop more concrete career plans.

This study's findings should be interpreted with ecological validity in mind, ensuring that they are applicable to diverse educational settings beyond Taiwan. By considering contextual similarities and differences, international readers can better adapt these insights to their own academic and cultural environments. Future research may expand on these findings by addressing several key limitations. First, the relatively small sample size in this study may limit the generalizability of the results; therefore, future studies should include larger and more diverse participant groups across different educational systems. Additionally, while the pre- and post-test design offers valuable insights, it provides only indirect evidence of the intervention's impact on student learning. To strengthen causal inferences, future research may consider incorporating longitudinal studies or experimental designs with control groups to enhance the reliability and applicability of the findings across global contexts.

### **AUTHOR BIOGRAPHY**

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## ACKNOWLEDGMENTS

The author would like to thank the four anonymous reviewers for their extremely helpful suggestions.

## ETHICS

The National Kaohsiung University of Science and Technology Institutional Review Board (IRB) approved this research. Participation was voluntary and all students consented to participate.

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