ORIGINAL RESEARCH

The Effectiveness of a Blended Learning-Based Life Design Course: Implications of Instruction and Application of Technology

Hui-Chuan Wei[1] · Yi-Hsuan Lin[2] · Li-Hsien Chang[3]

Abstract

Purpose Due to the outbreak of the COVID-19 pandemic in 2021 in Taiwan, we have adapted the face-to-face Life Design course to a blended learning approach with educational technology to cope with the problem of cross-generational confusion and anxiety towards later life from learners.
The objectives of this study are to.

1. evaluate learners' reactions after attending the Life Design course including their level of satisfaction, engagement (Level 1), and the applicability of courses in their life.
2. evaluate their learning outcomes after attending the Life Design course, such as their acquisition of knowledge, skills, attitudes, confidence, commitment (Level 2), and behavioral changes (Level 3).
3. explore the factors that enable and prevent students from transferring their learning in this course to the action taking and making behavioral changes.
4. explore how the application of educational technology can enhance the teaching and learning in the Life Design course.

Methods This study used an action research method to solve two main problems we identified in practice: students' confusion about their future life and the shortcomings of traditional teaching methods, which cannot meet the learning needs of this type of course due to the requirement of intensive personal reflection and self-disclosure. Participants were 36 master's students who completed the Life Design course. Based on this course's design, implementation, and evaluation, we used the new Kirkpatrick Learning Assessment Model (Kirkpatrick J, Kirkpatrick WK. An introduction to the new world Kirkpatrick Model. Kirkpatrick Partners, 2021) to analyze the learning effectiveness on the Reaction, Learning, and Behavioral levels.

Results To facilitate learners to overcome the cross-generational confusion of their life design and solve the shortage of face-to-face teaching methods, we took biographical learning as the core theme for this Life Design course and designed online and offline learning activities. The blended learning approach with educational technology allowed us to go beyond time and location constraints and provide a holistic and inseparable learning experience in both formats. The result of the evaluation shows that students who took the Life Design course were highly satisfied with the overall course design, topics, and the suitability of a blended learning approach, which motivated them to extend their learning outside the classroom and helped them benefit from a more trusted, personal and hybrid interaction with teachers and their peers both online and offline. On the learning level, students not only learned the correct knowledge of age perspectives, changed their views of career and personal development, and acquired skills for life design, but were also confident and committed to applying what they have learned in their future life. After the course, many students applied and integrated the learning into behavioral changes in their life. In terms of the difficulties and hindrances encountered in action taking, many students mentioned the lack of peers' support and constraints from their busy daily life. Many suggested providing extra support after the course with regular impulse, follow-ups, and individual feedback from teachers and peers in an online learning community. This indicates how educational technology can better support these elements in continuous learning and the transfer of learning.

Extended author information available on the last page of the article

Conclusion Based on these results, we affirm that implementing this Life Design course with a blended learning approach is indeed better than a fully physical course. However, the focus of a blended learning approach should be on learners from a pedagogical perspective rather than technology.

Keywords Blended learning · Life design course · Biographical learning · Career planning · Action research

Background

At the end of March 2018, the elderly population in Taiwan exceeded 14% of the total population, leading it to be considered an aged society. This percentage is rapidly increasing and it is estimated to be more than 20% in 2025, which indicates the development of a super-aged society [24]. According to the Ministry of Labor, the average retirement age in Taiwan, 61.75 years old, is earlier than in many other developed countries such as the United Kingdom, the United States, Japan, and South Korea. The aging population is an inevitable trend, which urges us to extend our focus from physiological and medical care in later life to concepts of self-actualization of life. However, not until the late twentieth century has the psychological development in old age been viewed as a research desideratum, leading to the current lack of completed research findings.

In the context of late modernity, individualization and pluralization of how people live their lives have increased [14]. Life course normality becomes more and more illusory. Following the norm or "recipe" of standardized life courses is no longer sufficient to cope with the increased changes and uncertainty, especially in the trend of aging and longevity. Kade emphasizes that "aging is a highly individual destiny which is not comparable with any previous stages of life" [15]. It is hard to find a role model and a single answer to the "right aging" process. Engle pointed out that "older people (the generation of elderly in the twenty-first century) is the most heterogeneous group like never before" [11]. Aging is therefore considered a vital task for every individual. As the baby boomers have entered their retirement, many are curious yet puzzled about the third phase of life. Not only retirees but also younger generations are currently unprepared for a future of longevity.

To cope with the cross-generational confusion and anxiety regarding development in later life [20], we have been developing the Life Design course since 2012. Due to the restrictions of the Covid-19 pandemic, the face-to-face course was adapted to a blended learning approach. A decade of teaching experience in the Life Design course not only showed us how this course can offer better preparation for a longer life expectancy but also revealed the need to explore and research more appropriate teaching methods, especially with the help of educational technology. The aim of this study is therefore to investigate how a blended learning approach with educational technology can better support instructors to facilitate biographical learning in the Life Design course, especially targeting the cross-generational problem in an aging society.

Theoretical Basis

Biographical Learning

Because aging is a highly individual and heterogeneous process, and the old styles of life planning and learning are no longer sufficient to cope with changes and uncertainty in the new era, we decided to use biographical learning as the main theoretical basis to develop the course.

Biographical learning aims to explore the relationship between learning and biography, the impact of a biography on the learning process, or biography as a subject of learning [2]. The biographical learning process requires individuals to actively and consciously reflect on their previous life experiences, (re)interpret them, and give them different or new meanings while integrating them with their current life situations and future development. This process is known as the "reconstruction" of the individual's understanding of their biography [7]. Biographical learning activities often include a review of one's life, interpreting or reinterpreting these life stories, and finally self-disclosure and sharing reflections in a small and trusted group. Through the biographical narration, we not only re-inscribe different meanings into our life experiences, but also see the similarities and differences between ourselves and others. As a result of others' sharing, we gain a clearer understanding of our own lives. This reconstruction of one's past is not merely a subjective "personal feeling", but the result of the interaction of one's experience with external social, historical, and cultural contexts [2].

The biography-centric didactic approach is based on constructivism and learner-centered didactic, with the learner as the subject or key person who constructs his or her learning. Therefore, teaching and facilitation should focus on the learners' individual life histories, different experiences, and interpretations, but at the same time also address the impact of external contexts and societal structure on individuals.

In a biographic-oriented pedagogy, the learner is the active planner of his or her learning journey and life [10]. They are the experts of their own life stories and are responsible for their own lives. Thus, the future of life and learning is actively shaped by the individual and self-directed learning plays an important role to shape this journey.

The role of teachers and teaching assistants is facilitators, companions, or coaches in the learning process. Through systematic instructional design, teachers and teaching assistants assist and inspire learners to take ownership of their learning, guiding them through a process that constructs their life trajectories and creates a blueprint for their life [10]. During the learning process, teachers and teaching assistants provide customized advice to different learners according to their backgrounds, needs, levels of understanding, and problems. This corresponds with the principles of learner-centered" and "problem-oriented" in adult teaching and learning.

Blended Learning

Due to the outbreak of the Covid-19 pandemic in 2021 in Taiwan, we have adapted the original face-to-face course with a blended learning instructional design. Blended learning is generally known as a hybrid teaching method that combines traditional face-to-face learning and distance (online) education, where learners can adapt their learning process flexibly based on their needs [8]. According to Mei-Yiu Shi [31], blended learning can be seen as a way of teaching that combines different teaching techniques, methods, media, and technologies, covering both synchronous and asynchronous learning.

Although there are various combinations of hybrid teaching methods, the key to blended learning remains the close integration of virtual and face-to-face learning in instructional design, which aims to utilize the advantages of both methods and enhance students' overall participation and learning effectiveness. Simply uploading learning materials onto the internet is not sufficient for a successful blended learning approach. Teachers or instructors must redesign their courses to explicitly encourage an active learning process from learners [31].

There are many studies covering the effectiveness of blended learning. While some literature reviews focused on specific disciplines such as English teaching [1], health professionals [21] etc., the others highlight the growth and effectiveness of blended learning implementation across higher education [12, 13, 23], K-12 [23], and corporate training sectors [29]. Although there were a few studies focused on blended learning in the elderly population, where the courses in U3A (universities of the third age) and IT (Information Technologies) or ICT (Information and Communication Technologies) courses were investigated [3, 19, 26], the blended learning implementation in the context of a (later) life planning course remains uninvestigated.

This lack of research on the application of educational technologies in life design/ planning courses indicates the necessity of our research. In an era of longevity and rapid changes, the question of how to facilitate learners in designing their own life and preparing for their future becomes more and more important. Furthermore, how educational technology can better support the effectiveness of teaching in biographical learning is a crucial question that is worth further exploration.
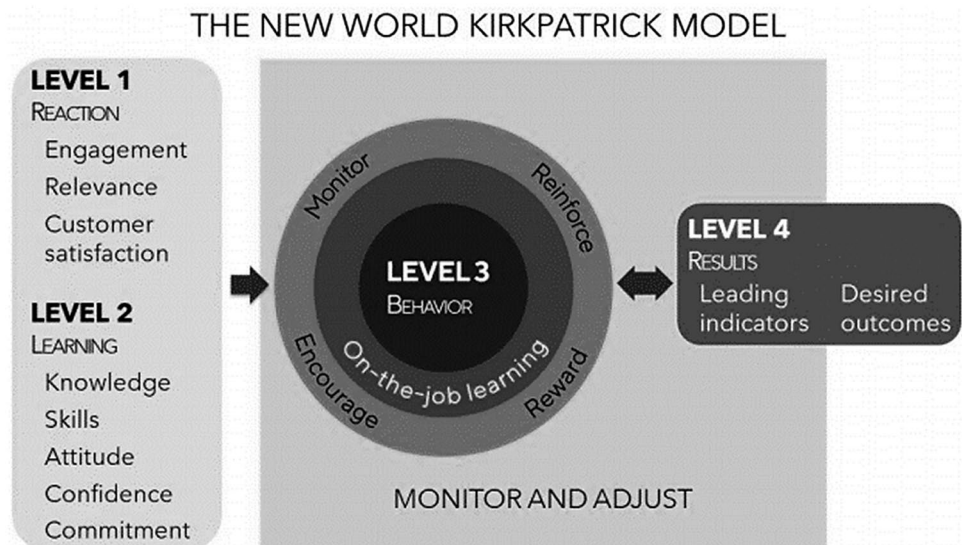
Evaluation of Learning Effectiveness

As for the redesign, implementation and evaluation of a blended learning approach in the Life Design course, we followed the concept of the New World Kirkpatrick Model ([17], Fig. 1), which is the revised version of the Kirkpatrick Model [18]. Several studies on Kirkpatrick's four-level training evaluation model have been published since its inception in 1959. It was adapted to many training environments and achieved high performance in evaluating training. Studies show this model continues to be useful, appropriate and applicable in a variety of contexts [5]. As the revised version released in 2010, The New World Kirkpatrick Model followed the concept of "starting with the end in mind" and added new elements, which urges teachers and instructional designers to start by defining performance needs. These range from concrete learning indicators or measurable desired outcomes (level 4) to behavioral changes (level 3), learning results (level 2), or reactions (level 1) [17].

The implementation of the Kirkpatrick Model can be divided into the planning and application phases. In the planning phase, course instructors begin at level 4 by defining the desired results they want to achieve from the course. During the application phase, the course progresses from level 1 to level 4, as intended [17].

With this more detailed process, the New World Kirkpatrick Model gave training evaluators a more robust framework to work with [17]. Therefore, we used it to evaluate the effectiveness of blended learning in this study. The aim of this study is to evaluate learners' reactions (Level 1) including their level of satisfaction, engagement, and the applicability of courses in their life; their learning outcomes (Level 2) after attending the Life Design course, such as their acquisition of knowledge, skills, attitudes, confidence, and commitment as well as their behavioral change and the transfer of learning (Level 3) after a longer period.

Fig. 1 An introduction to the new world Kirkpatrick model [17]

THE NEW WORLD KIRKPATRICK MODEL

LEVEL 1
REACTION
Engagement
Relevance
Customer satisfaction

LEVEL 2
LEARNING
Knowledge
Skills
Attitude
Confidence
Commitment

Monitor
Reinforce
LEVEL 3
BEHAVIOR
Encourage
On-the-job learning
Reward

LEVEL 4
RESULTS
Leading indicators   Desired outcomes

MONITOR AND ADJUST

Methods

This study adopts an action research approach, which is designed to address problems encountered in practice and is an effective method for improving practice through critical self-reflection by the researchers. Action research entails a spiral cycle of "plan, act, observe and reflect" and is characterized more by its methodology than specific research techniques, mainly because the focus of the research is action (practice). The rigor of this method lies in the consistency of logic, experience, and decision in the interpretation of observations and reflections as well as in the recommendations for plans and actions. Action research, when applied to teaching, allows teachers to improve their teaching through self-reflection [16, 22].

Based on the initial empirical data, the problems students faced regarding their (later) life included "a lack of direction, goals, motivation, and communities or mentors to discuss with." There was also a need to develop a changing mindset and actionable plans for their future development, to cope with changes as well as with longer life expectancy, which encourages us as teachers and researchers to develop life design courses. Over the past 10 years, researchers have planned and implemented life design courses via face-to-face lectures along with students' self-reading and reflection exercises. Other details of the courses are as follows:

- learning objectives: be able to explore the possibilities of (later) life, to reflect on one's biography, to create a life blueprint and actionable plan, and to consider and evaluate on one's well-being.
- learning mode: face-to-face lectures, students' self-reading and reflection exercises.

- course level: 18-week course for more than 30 students from the age of 20 + to 50 + ; no follow-up course or learning materials afterwards.
- learning topics: life-long learning, life design, self-growth.
- learning activities: classroom lecture, self-reading, reflection and writing exercises.

In our teaching practice, a face-to-face teaching method was found to be not effective enough to meet the learning objectives of this Life Design course due to the constraints of limited time and the learning location. It was not only difficult to acknowledge heterogeneous needs for life design based on the diverse backgrounds and wide age distribution among learners (20–50+) with different life experiences in a classroom setting, but also hard to encourage self-disclosure in biographical narration in a face-to-face cohort with more than 20 learners. Based on our past experiences, Asian students tend to passively listen to lectures rather than actively speak. Biographical learning requires a lot of thinking, continuous practice, feedback, and reflection. In response, researchers adjusted the course by increasing peer feedback on students' self-reading and exercises and adding more one-on-one coaching conversations between students and instructors. The most crucial turning point in our research was when, due to the changing situation of the Covid-19 pandemic, we were forced to convert our course into a blended learning format to adopt flexibility.

Considering the situation analysis and the challenges above, we focused this study on the problem of cross-generational confusion and anxiety toward later life and how a blended learning approach with educational technology can better support instructors to facilitate biographical learning in the Life Design course. In the next section, the results of

this study of the Life design course with blended learning design will be presented based on an analysis of participants, their action plans, and the results of evaluation surveys after the course. In addition to a discussion of the results, suggestions based on the observations and reflections of the researchers will be provided.

Results and Discussion

As action research is a spiral cycle of "plan, act, observe and reflect", the results of this study will be explained based on this sequential order and divided into two parts. The first part will focus on planning and action (course implementation), while the second part will discuss observations and reflect on the conducted evaluations.

Planning and Action

Objective Setting and Content Design

Based on the previous experiences of teaching this Life Design course, we defined the following learning objectives: a reflection of perspectives on aging, an updated mindset about life design, and mastery of the secret of happiness as understood by Wei and Li [20], which is by way of designing a life plan that one truly values and taking action on it.

Alheit pointed out that the design of biographical learning needs to place personal experiences in external contexts such as social, historical, and cultural frameworks. Therefore, the topics of this course include analyzing external context (situations and resources), practicing self-inquiry (questions like "who am I" and "where do I want to go"), applying life design tools, building life prototypes, experimenting, reflecting and revising the plans in action. The main purpose of external context analysis is to help students understand the trend of longevity, to reflect on one's perspectives of aging and ages, to question the old norm of three development stages of life (study-work-retirement), and to establish the

mindset of Life 3.0, which is more flexible and fluid regarding changes.

In the self-inquiry section, topics like the mission of life, inner voice, a map of one's life course, case study, and reflection of benchmark figures were covered. After acquiring the basics of life design, we encouraged students to use life design tools to develop their blueprint of Life Design 3.0 and create life prototypes with a clear picture of a "one-day lifestyle" and 90-day action plans. In the action phase, we recommended the practice of atomic habits and facilitated reflecting in action continuously during the process. Last but not least, we summarized their learning from this course, reflected on their changes throughout the learning process together, and also followed up with their action taking after the course. Each participant picked out the most helpful tools or the most useful feedback in their own "life design toolkit", to help them move forward and revise their life design after the course.

Blended Learning Design

This 18-week Life Design course is designed using a blended learning approach, which includes online and offline, synchronous and asynchronous learning activities shown in Table 1 below.

The instructional design of these blended learning activities can be characterized by three main features as follows:

Inseparable Blended Approach in Teaching Before each session, the teachers gave individual feedback on student assignments. Based on the forum discussion on the Facebook group and learners' feedback after every classroom session, teachers identified common questions and challenging points of students' life design and addressed these by adding additional learning resources, adapting the course design, and providing recordings of the answers to these questions. Also, learners were asked to comment on the post to make sure they all followed up. This blended learning design allowed us to provide holistic communication and individual support.

Table 1 Instructional design of this study

Online	Offline
Synchronous	
One-time online live instructor-led session	Four classroom sessions with instructor-led lectures, peer group discussion, and review. Students share their experiences and feedback
Asynchronous	
(1) Forum discussion on Facebook group: 12 different tasks, assignments	Not applicable to this course
(2) Q&A: recorded teacher responses to questions and feedback	
(3) Three reading assignments	
(4) Individual feedback from instructor	

Social Learning in a Blended Learning Approach We used a Facebook group to share articles with students as additional learning resources and designed 12 small tasks/ assignments according to the weekly topics of the course syllabus. Students needed to complete the assignments by posting or commenting in the online group. The teaching assistant (facilitator) would also comment and encourage peers to give each other feedback to enable social learning in an online environment. Teachers also pointed out some interesting thoughts, new ideas and reflections from the online forum and invited the students to share their own in the classroom sessions, to extend online learning to an offline context and strengthen the benefits of both learning ways.

Building a Trusted Atmosphere with a Blended Learning Approach For biographical learning, building a trusted environment between teachers and learners and between learners is crucial since self-inquiry and biographical narrating play an important role in learning activities. Thus, at the beginning of the course, students from different generations were allocated into smaller, closer groups to support each other and give and take feedback during the blended learning process.

To overcome challenges like the lack of social interaction, trust and understanding of other generations, we planned an online session as a warm-up before the classroom session for biographical narration and sharing one's life prototypes. In this online session, students were asked to watch the movie "The Intern" and share their thoughts regarding intergenerational collaboration. By thinking about questions like "what value would you like to bring in?" and "how can you benefit from other generations?", learners were encouraged to realize that everyone regardless of generation or stage of life can learn from others and make their contribution. In addition, through sharing their life plans and prototypes on the online forum, learners gained a certain amount of understanding of their peers and it became the foundation of their peer review and feedback.

Observation and Reflection in the Teaching Process

In action research, the stages of observation and reflection are crucial, because the key findings build a foundation for solving targeted problems and improving practice through critical self-reflection. The following observations and reflections will be divided into two parts based on two time-frames: during the course and after the course.

Based on the feedback sheets of every classroom session, reading assignments and reviews, a forum discussion on Facebook, and observation in other learning activities and interactions (e.g. the Blueprint of Life Design 3.0, 90-day action plan), we as teachers and researchers were able to evaluate students' learning progress and adapt the instructional design accordingly. Our key findings in the teaching process are summarized as follows:

The Learning Activities Motivated Active Reflection and an Experimental Mindset

After taking the quiz to test their knowledge about aging, many students were surprised to see how a negative attitude towards aging can lead to misunderstandings. They actively searched for more information and shared this quiz with their families and friends. One student in our class, an elementary school teacher, even created an online quiz using Kahoot and Google Form to ask her elementary school students and friends of the same age, which contributed to the realization that all generations in our society harbor strong negative stereotypes towards aging.

In addition, some students were inspired by the learning activity "Create Your Prototypes of Life" and turned their plans into action. For example, one launched a podcast channel to share his thoughts and learning regarding aging, one fulfilled her dream to open an online shop and the other started to plan her own baking business. Teachers pinned and shared these action posts on the top of the Facebook group and invited participants to share in classroom sessions to encourage more students to take action.

The Instructional Design Facilitated Learners Well, Regardless of Their Generation or Stage of Life

We provided different topics and questions for reflection based on the developmental tasks of different life phases and studied the life stories of people from various generations who acted regardless of their age. The aim of this was to challenge ageism and the limits one set for him- or herself due to their age and to emphasize our key message, which is "it's more important to listen to your inner voice, rather than to what other people think you should or should not do".

In addition, in the "Draw Your Life Path" activity, we facilitated students' reflections on the important moments in their life, helped them visualize these in a picture, and shared them within our group.

This activity focused on important moments in their lives, which differed based on their subjective definition. It identified the main transitions in life, such as transitioning from a full-time job to retirement or returning to work. It could also be significant personal experiences such as graduation, marriage, illness, unemployment, or the loss of important others. By reviewing and reconstructing their biographies, students gained a more comprehensive and holistic understanding of their life, which should help them to reposition and re-orient themselves in response to life changes.

Intergenerational Exchange Enriches Life Design Course

In our course, students responded to Facebook group posts to see how different generations think about the same issue and how they differ among themselves. The course is also designed to take advantage of multi-generational composition by putting different generations in the same peer groups to give feedback on each other's life design projects and to provide opportunities for each other to benefit from their strengths, so that different generations can learn from each other on what they lack, such as experience, courage, or mastery of new technology. At the same time, we designed a reading review sharing session with students from different generations to enhance the understanding of each other's values, outlook on life, and views of works. Through encouragement and feedback, experience sharing and resource connection between generations, students were able to face their life design problems and challenges. The mutual encouragement of peers, the diversified perspectives brought by different generations, experiences, and values, as well as specific resources and suggestions for action plan revision, fully demonstrate the benefits and values that intergenerational exchange can bring in life design.

In conclusion, we found that by guiding students to learn about external contexts, to inquire about and listen to inner voices, and then share with and learn from peers, we could effectively help students understand the interactions between their personal life and the outer world, and achieve what Alheit called "seeing the similarities and differences through the sharing of others" and "placing personal experiences in external contexts such as social, historical, and cultural frameworks" [2]. Beyond that, the problem of not being able to meet the diverse needs of the students in an offline classroom setting due to their wide age distribution and diverse backgrounds was solved using online learning activities and social media. Finally, the exchange and sharing of students from multiple generations provided them the opportunity for self-reflection, so that they could understand their own life more comprehensively and construct a more actionable life design plan.

Observations and Reflections After the Course—Results of the Learning Effectiveness Analysis

34 valid questionnaires were collected from the 36 participants that completed the course. Their age distribution was: 20–29 years old (19), 30–39 years old (3), 40–49 years old (9), 50–59 years old (3). During and after the course, we used the new Kirkpatrick Learning Assessment Model [17] to analyze the learning effectiveness on the Reaction, Learning and Behavior levels as follows:

Level 1—Analysis of Reaction Level

In this new version of the assessment model, the reaction level no longer refers only to student satisfaction (Table 2), but also to the degree of student participation in the learning process (Table 3) and the future applicability of the learning program for the students (Table 4). A five-point scale was used to ask students to rate their satisfaction on a scale of 1 meaning very much disagree (or very dissatisfied) up to a score of 5 meaning strongly agree (or very satisfied).

In terms of student satisfaction (Table 2), students' satisfaction with the course exceeded 4.5 on a five-point scale, with the highest satisfaction ratings for the course topics and the way the online and physical interactions were designed. The high satisfaction rate of the blended learning design also showed the suitability of this approach for this course. This can be attributed to the integration of online elements, which gave teachers more opportunities to give individualized feedback and pay attention to the needs of individual learners. Teachers and teaching assistants provided individualized feedback according to the background, level, and problems of different learners, in line with the principles of "learner-centered" and "problem-oriented" adult teaching and learning.

In terms of students' engagement (Table 3), they indicated that the design of the course was motivating and made them feel more engaged, especially from teacher responses (25.25%), peer group discussions (23.23%), and physical classes (21.21%). Since teacher responses and peer group discussions were presented both online and offline, the importance of the physical course as the main axis is evident. While physical interaction is irreplaceable for the course, online activities made the physical course more effective. Raspopovic & Ljubojevic [27] also showed that the use of social media in teaching activities increased learners' self-efficacy, motivation, and self-esteem during the learning process while reducing anxiety.

The applicability (Table 4) refers to the transfer of learning in a participant's real life or future work. The learning objectives of this course are to reflect on age perspectives, update mindset of life design, and master the secret of happiness as understood by Wei and Li [20], which is by way of designing a life plan that one truly values and acting on it. This course is designed to help students understand the future trend of life development and grasp future work styles. The results of the surveys show that the course topics and instructional design have achieved the teaching objectives.

Level 2—Analysis of Learning Level

The second level of the learning assessment model is the "Learning Level", which consists of five dimensions: knowledge, skills, attitude, confidence, and commitment.

Table 2 Assessing student satisfaction with the course at the reaction level

Questions	Average score
1. My overall satisfaction with the instructors	4.82
2. My overall satisfaction with the course topics	4.88
3. My satisfaction with the "online + offline" blended teaching methods	4.82
4. My satisfaction with discussion topics and assignments in Facebook group	4.68
5. My satisfaction with peer interaction	4.53
6. My satisfaction with cross-generational interaction	4.68
7. Which learning activities have helped me the most (optional):	
(1) Teachers' response (27.62%)	
(2) Classmates' opinions and feedback (20.00%)	
(3) Discussion and other interaction in the Facebook group (16.19%)	
(4) Case studies (16.19%)	
(5) Reading (15.24%)	
8. For the blended learning design of this course, I think: (optional)	
(1) This course is a good mix of both (47.92%)	
(2) A blended learning approach is appropriate for the attributes of this course (43.75%)	
(3) I prefer offline physical course completely (8.33%)	
(4) I prefer complete online course (0%)	

Table 3 Assessing student engagement at the reaction level

Questions	Average score
1. I was very engaged in reading, actively practicing and thinking in this course	4.56
2. The design of this course motivated me and made me feel more engaged	4.71
3. Which learning activities have engaged me the most (optional)?	
(1) Teachers' responses (25.25%)	
(2) Peer group discussion (23.23%)	
(3) Physical classes (21.21%)	
(4) Discussion and other interaction in the Facebook group (17.17%)	
(5) Classmates' opinions and feedback (12.12%)	
(6) Others (self-filled content) (1.01%): assignments	

Table 4 Assessing the applicability of the course from the reaction level

Questions	Average score
1. This course allows me to understand the development trend of life with a life expectancy of 100 and to plan my life in this context	4.79
2. This course allows me to grasp the changing face of work in the future world and to update traditional concepts of work	4.65
3. This course allows me to learn the foundation and framework of life design, and to be able to flexibly adjust in the future	4.82

"Knowledge" refers to the learning objectives, "skills" refers to the learners' ability to achieve the learning objectives, "attitude" refers to the student's belief that the learning can be applied, "confidence" refers to the learners' confidence that they can effectively apply the learning, and "commitment" refers to the learners' willingness to commit and propose action plans. We used a five-point scale and asked the students to rate their level of agreement, with 1 indicating "strongly disagree" and 5 indicating "strongly agree" (Table 5). The questions on three things the participants

learned the most in the knowledge, skills and attitude dimensions also gave us an overview of qualitative data (Table 6). The tables below show the results of this assessment.

As the results are shown in Table 5, students' learning scored 4.6 or higher on all questions in the Knowledge Dimension. Students were able to identify and reflect on their perspectives on aging and adjusted their mindset about life design in the trend of longevity, which echoed the learning objectives of this course. The answers to the open-ended questions in Table 6 showed that students

learned the most from the concept of starting with the end in mind, the Life Design 3.0 concept, and the trend of life at 100 years old. On the Skill Dimension, students' learning scored 4.5 or higher, they also claimed Self-inquiry, life prototype design and inner-voice exercise are the three things they learned most from this course. On the Attitude Dimension, the average score of all questions was above 4.65, and the three things regarding Attitude they have learned most are "daring to imagine a desired future", "feeling convinced to change" and "daring to be different".

In addition to Knowledge, Skill and Attitude, Confidence and Commitment were added to the Learning level (Level 2) in the New World Kirkpatrick Model to close the gap between learning and behavior, bringing learners' responsibilities into the evaluation. As Table 5 shows, students' self-evaluations on the Confidence and Commitment Dimension are as high as 4.79 and 4.65, respectively, indicating the students are confident and willing to continue practicing in the future. On the one hand, the results echoed the change in this new model which emphasized personal motivation and

Table 5 Learning level assessment

Dimension	Questions	Average score
Knowledge dimension	1. Through this course, I know that the elderly have diverse life experiences and developmental potential	4.65
	2. After this course, I will be able to identify wrong concepts of aging or aging stereotypes	4.68
	3. After this course, I know that life design is not straightforward and there are many different workplaces and work styles	4.82
	4. After this course, I know that life can be designed and needs to be designed	4.94
Skill dimension	1. After this course, I can clearly perceive and express my inner voice as a basis for designing my life	4.71
	2. After this course, I can design my own life prototypes and actionable plan on a daily and quarter-basis and put it into practice	4.50
Attitude dimension	1. I think this course helped me to establish a correct view of age and aging	4.65
	2. I think this course helped me to update my view of work, which will help me to choose my future work	4.71
	3. I think this course helped me to master the principles to build my desired life independently and continuously	4.82
Confidence dimension	1. I think I can use what I learned in the course to reduce stereotypes about different generations	4.79
	2. I think I can use what I learned in the course to continue to find or create work that resonates with my inner voice	4.79
	3. I think I can use what I have learned in the course to take action and make revisions to my plan continuously to achieve a more ideal life	4.82
Commitment dimension	1. I will clearly identify various aging stereotypes and clarify them to others in a timely manner	4.65
	2. I will apply the Life Design 3.0 concepts to my future work or life decisions	4.85
	3. I will continue to practice, act and make revisions based on what I have learned in the course to achieve my desired life	4.79
	4. I am willing to organize a collaborative learning team to help each other with designing life continuously	4.74

Table 6 Learning level assessment (open-ended questions)

1. The three things I have learned most from this course on the Knowledge Dimension are
   (1) Concept of starting with the end in mind (30.39%)
   (2) Life Design 3.0 concept (28.43%)
   (3) Trend of life at 100 years old (24.51%)
2. The three things I have learned most from this course on the Skill Dimension are
   (1) Self-inquiry (23.53%)
   (2) Designing three life prototypes (16.67%)
   (3) Hearing the inner voice (15.69%)
3. The three things I have learned most from this course on the Attitude Dimension are
   (1) Daring to imagine a desired future (26.47%)
   (2) Feeling convinced that I can change my life (23.53%)
   (3) Daring to be different (14.71%)

effort in the modern world. On the other hand, as life design is a non-stop process, these data also imply that students can learn self-directed as far as life design issues are concerned.

To sum up, the various blended learning activities not only encouraged students to have an attitude shift and dared to imagine a desired future but also helped them to build up relevant skills, attitude, confidence and commitment to apply the learning. They felt convinced that they could change their life and truly believed that they could define their own success and that this can be unique to them.

Level 3—Analysis of Behavior Level

To further evaluate the effectiveness of the course on the behavioral Level (Level 3), a follow-up survey was sent out eight months after the course to evaluate how the participants transferred the learning from this course to their life. 17 students responded among the 36 participants. Among them, 82.4% were female and 17.6% were male, with the following age distribution: 47.1% in their 20 s and 30 s, 41.2% in their 40 s and 11.8% in their 50 s and above.

The result of the survey shows that 94.1% of the participants continued to think about their life design after the course, including reflecting on the key takeaways, recalling the interaction, sharing and exercises with facilitators and peers, as well as applying and integrating these into their life. Furthermore, 64.7% of participants indicated that they continued to make changes based on the life design plans they drafted in the course. This includes reviewing their life with their own "life design toolkit", building positive habits, gathering resources for the blueprint of Life Design 3.0 and taking action on their 90-day action plans.

In addition, when asked about the difficulties and hindrances encountered in the action taking after the course, the most common responses from students were the lack of peers' support, where they had no peers to discuss with or take action together with. The second common hindrance was conflict and constraints with daily life such as no time, no work-life balance and stressful responsibilities in different roles. Some mentioned they needed extra support in action taking after the course, especially when they had no motivation, didn't know how to proceed or failed after trying. Finally, in terms of the concrete support participants wanted to receive after class, continuous updates and refreshers of relevant knowledge and skills were most frequently mentioned with regard to maintaining motivation and keeping momentum. Some students suggested that the teachers could provide individual feedback on their questions, actual problems and actions. Belonging to a learning community with peers for discussion, sharing, learning and motivation was also a common need mentioned in the survey. The preferred forms of post-course support from participants included receiving new information about the relevant knowledge through Facebook discussion forums, peer interaction through a LINE group (which is the most commonly used social media for message communication in Taiwan), and teachers' replies or feedback on individual questions in audio or video formats in an online learning community.

Based on the survey results, this course has successfully reached its objective on the behavioral level by encouraging students to start thinking and reflecting on their life design and taking action on it. To motivate participants to work on their life design plan continuously and keep momentum, providing new inputs and peer support after class is crucial. In addition, a follow-up email after the course also plays an important role, not only as a reminder but also as an impulse to re-engage.

The needs for post-course support echo the positive boosting factors for behavioral changes (Level 3) in the New World Kirkpatrick Model [17], which include reinforcement through follow-up, reminders, reviewing tools and assignments, learning by doing, self-directed learning; encouragement through coaching or mentoring; reward through affirmative praise or giving bonuses and monitoring through action learning, interviewing, observing, self-examination or survey, etc. They also indicate how educational technology can better support these elements in continuous learning and the transfer of learning, encouraging learners to continue various behavioral changes and steadily move towards their ideal life.

Discussion

In this study, the "Plan, Act, Observe, Reflect" process of action research was used to address and solve two main problems: that learners from many generations are confused about their (later) life, and that face-to-face teaching method cannot meet the learning objectives of this Life Design course.

First of all, the results from the reaction and learning levels revealed that students were not only highly satisfied and engaged with the content and blended learning approach, but also learned the knowledge of age perspectives, views and skills for life design. They were also confident and committed to applying what they have learned in their future life. Furthermore, the results of the follow-up survey also show that this Life Design course has successfully reached its objective on the behavioral level by encouraging students to think, reflect and take action on their life design to better prepare for longevity. These findings echo Oishi's [25] and Reilly's studies [28] on the effectiveness of the Designing Your Life courses at Stanford: both studies showed that students who took this course were less likely to have "ineffective thoughts" and were more able to design and pursue the life they wanted; this kind of courses also helped to strengthen students' thinking and brainstorming skills. It is

clear that life design courses are beneficial to students and that there is a huge need for such courses.

Based on our observations and reflection regarding the second issue, we affirm that the implementation of this Life Design course with a blended learning approach is indeed better than a fully physical course. The design of the physical course allows students to share their knowledge and experiences on a shoulder-to-shoulder, face-to-face basis. This is complemented by an online learning setting where we provided and encouraged more personalized feedback, more open communication, more diverse supplemental learning materials and more focus on students' achievements.

In addition, the blended learning approach makes "sharing" more effective. As mentioned earlier, sharing and self-disclosure carry a lot of weight for biographical learning in the Life Design course. In the past, due to time and location constraints of physical courses, we were unable to give students sufficient time and space to share. The combination of physical and online activities allowed us to design different forms of "sharing" activities and to create a sense of trust in both online and offline settings. For example, we enhanced the understanding and interaction between students before the classroom sessions through the sharing and discussion on the online Facebook group, and also strengthened their empathy by having them read each other's life plans in advance.

The online learning environment created a certain sense of familiarity and strangeness, where people could share their thoughts, ideas and stories without knowing each other's background. This feedback and interaction also helped to reduce individuals' doubts about generation gaps, differences of age and experiences, etc., which certainly created a trusting and supportive atmosphere for biographical narrating and sharing personal life plans in person. These findings echo those of Salmon, Ross, Pechenkina and Chase [30], who found that the use of social media in higher education can enhance learning outcomes and academic performance and contributes to knowledge construction. The use of social media in learning can facilitate the development of online communities, allowing students to collaborate with less time and location constraints and become more engaged. It can also strengthen students' social relationships with each other, making them more willing to share their opinions and views than they would be in a physical learning setting. Finally, it can allow more introverted students or those with low self-esteem to express themselves more freely. The post-course survey revealed the need for continuous learning with peers and teachers in an online format. It indicates how educational technology can better support learners to keep momentum and motivate the continual transfer of learning.

With the flexibility of a blended learning approach, we could revise the instructional design of the Life Design course to address a variety of needs of our learners with diverse backgrounds, especially generational differences. Since each life journey is a highly personalized "product" combining individual differences in biography and external contexts, we have emphasized the aspects of cross-generational communication and collaboration in the course to give more depth to the intergenerational exchange where people from several generations gather together. By facilitating sharing from learners with diverse backgrounds, experiences and knowledge from different generations, participants not only discovered their differences but also gained insight into the influences of different generations/cohorts and external environments on their life paths, work, learning, development and values.

By implementing a blended teaching design, we as teachers and researchers realized that when talking about online learning, the pedagogical aspects such as a learner-centered design still need to be emphasized, rather than dominantly focusing on technology. Alsaadat's study on the application of social media to teaching and learning points out that the most effective social media is the one that engages learners to the greatest extent, and is therefore the most suitable online teaching tool for life-long learning [4].

Conclusion and Recommendations

Conclusion

In this study, the Life Design course was developed for 36 master's students ranging from 22 to 60 years old with approaches including learner-centered biographical learning, action research, and a blended online and offline instructional design. The results showed that regardless of age group, learning life design by taking this course is an effective way to cope with the confusion and anxiety of later life and societal changes. To summarize the results of the study, the following conclusions were made.

1. The theory and subject of this Life Design course can motivate one to design for his/her life in response to an aging society

The Life Design curriculum is based on the theory of biographical learning, which requires learners to reflect on and reinterpret their past experiences to give them different or new meanings while attempting to integrate their current lives with their future development actively and consciously. The learning themes we designed are effective in helping learners understand the relationship between an aging society and themselves thus motivating them to take the initiative to begin designing their career learning for a society with longevity.

2. This study focuses on learners' careers and uses multiple "teaching strategies" including action research, multimedia, and online and offline hybrid designs to promote learning.

The process of the blended teaching practice requires attention to individual learners' performance and the design of different activities to stimulate learning reflection, such as: using various media to share, teachers giving feedback to classmates, and designing multi-generational group discussions, which are elements of promoting learning.

3. In this study, formative assessment was used as the main assessment, and Kirkpatrick's three-level assessment was applied to collect quantitative and qualitative data.

The study data showed enhanced learning outcomes for the learners over the semester. The participants affirmed that the blended learning approach used in this course, with a mix from physical and online learning with educational technology and teacher feedback were the key elements that promoted their learning motivation and outcomes.

4. The overall effectiveness of learning in this study was well recognized by the participants, but not all of them were able to maintain their motivation for learning and application after the course.

Although the blended learning design, several activities and multiple channels for feedback, practice, and interaction helped motivate participants to reflect and act, the participants were not able to ensure that they can continue to implement their life design after the course. This is an area that needs further investigation.

Recommendations

Based on our research results, we were convinced that a blended learning approach is suitable for the Life Design courses. However, it's important to be aware that the focus of a blended approach should be on "learners" rather than "technology". We truly believe that educational technology is only one medium to assist teachers in achieving their objectives. For this reason, tools don't have to be complicated and fancy. It is the instructional design that makes difference.

Our study has provided a hybrid design of career planning and life design curriculum and teaching model, and we suggest that more of these courses be offered in universities as a compulsory part of the university general education. However, the blended learning instructional design often requires more instructional resources such as additional time for learning and individual feedback, more course elements that encourage interaction, and several follow-up activities to monitor the learning progress, which we archived with a main instructor and competent teaching assistants, otherwise, it is difficult to create effective learning outcome.

However, the conditions and limits of the university made little room for adjustments in terms of extra instructional resources in a blended learning implementation. The structural constraint of higher education makes it more difficult to track students' learning outcomes. We, therefore, suggest that universities should be more open and flexible in their teaching policies. As designing for life is a life-long learning journey, follow-up activities from teachers can help learners continue to take action, but it is not obligatory. Future research and development on how to support continuous and self-directed learning are needed.

Declarations

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Authors and Affiliations

Hui-Chuan Wei[1] · Yi-Hsuan Lin[2] · Li-Hsien Chang[3]

✉ Li-Hsien Chang
  chang.lihsien.clh@gmail.com

  Hui-Chuan Wei
  aduhcw@gmail.com

  Yi-Hsuan Lin
  emilylin2011@gmail.com

[1] Department of Adult and Continuing Education, Aging and Education Research Center, Center for Innovative Research On Aging Society, National Chung Cheng University, 168, University Road, Ming Hsiung, Chia-Yi 621, Taiwan

[2] Adult Education, Department of Adult and Continuing Education, National Chung Cheng University, Chia-Yi, Taiwan

[3] Adult Education and Lifelong Learning, Institute of Educational Sciences, Humboldt University of Berlin, Berlin, Germany