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An interest-driven creator English course for developing Chinese private college students' listening and speaking proficiency under a blended setting

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Abstract

The primary objective of this study is to enhance the English language proficiency of undergraduate students pursuing bachelor's degree programs. This is achieved through the development of a mandatory English course based on Interest-driven creator (IDC) principles within a blended learning environment. The IDC course was implemented over a 16-week period, consisting of 16 lessons, at a private college in China. To evaluate the impact of this course, a quasi-experimental design was employed to analyse the language learning outcomes. The performance of two groups, the experimental group (EG) and the control group (CG), was assessed using the Exam English (standardized according to CEFR) as both a pretest and posttest measure. Additionally, a semi-structured interview was conducted to gather valuable insights into the students' learning experiences. The findings of this study indicate that the blended learning approach effectively improved the students' English proficiency in listening and speaking.

Keywords: Interest-driven creator English course, Blended setting, Proficiency in listening and speaking

Introduction

Pelletier et al. (2021) have predicted an inevitable future post-epidemic that is focused on innovative instructional technology. Consequently, the traditional pedagogy of higher education institutions (HEIs) will become less competitive and desirable (Xing & Bolden, 2019). Considering the rapid development of technology, adolescents, who are representative digital users, can benefit from learning English as a second language or English as a foreign language (ESL/EFL) (Madbouly et al., 2020). Continuous exposure to digital content can effectively enhance their acquisition of competence-based knowledge both online and offline in blended environments.

In addition, the digital approach involves implementing innovative teaching activities, curricula, and instructional designs to foster lifelong learning (Sundqvist, 2022) using

technology, such as the flex blended setting. The specific flex blending learning setting creates an appropriate educational environment for various weekly activities (Athoillah, 2022; Yajie & Jumaat, 2023). However, the traditional approach to HEIs (Chen & Zou, 2018), characterized by task-based language teaching with an exam-oriented system, remains prevalent in China. Therefore, this study takes into account a blended setting in course design.

Nevertheless, to address the current challenges and narrow the gap between curricular and extracurricular knowledge, it is crucial to implement an innovative and dynamic pedagogy for mobile-assisted language learning (Xie et al., 2019). This is especially important for Chinese college students who are digital natives yet make awareness and proficiency in utilizing digital technologies for learning purposes (Almazova et al., 2020). Unfortunately, the academic listening and speaking proficiency of Chinese ESL/EFL learners in colleges, as measured by international standardized tests such as IELTS, remains comparatively low in the Asian region (IELTS, 2018; IELTS, 2019; IELTS, 2021), which serves as benchmark for assessing language proficiency based on CEFR standards.

Chinese ESL/EFL learners have consistently demonstrated lower proficiency in overall academic listening and oral examination compared to learners in Thailand and Japan from 2018 to 2021. Recent score data from 2021 reveals that Chinese learners achieved a score of 6.0 in listening and 5.6 in speaking, which still falls behind Thailand's 6.3 and 5.8 as well as Japan's 7.6 and 6.8. Consequently, effective strategies are required to enhance the listening and speaking skills of Chinese ESL/EFL learners from 2020. In this regard, implementing a blended setting that combines ESL/EFL classroom interaction and language proficiency (Ginaya et al., 2018) becomes a practical choice for interest-driven creator (IDC) courses (Chen et al., 2018).

The main objective of this study is to develop an IDC course that aims to enhance the listening and speaking proficiency of Chinese college ESL/EFL students. The curriculum emphasizes a proficient learning process (Tan et al., 2020) that involves integrating and aligning technology with instructional practices and habits to support the achievement of target language proficiency. The central concept evolves around cultivating interest-based habits through a three-component 'loop' that establish a coherent learning process: the 'trigger interest loop', the 'driven loop for learning creation', and the 'creator loop for learning habits'. This IDC course is designed to cater to the language proficiency needs of students in Chinese HEIs (Looi et al., 2023). Based on the objectives, the research questions that is addressed in this study are as follows.

- (1) What is an English course syllabus based on IDC via a blending setting at a Chinese college?
- (2) Can an IDC course implemented in a blended learning setting effectively enhance the listening and speaking proficiency of Chinese college students?
- (3) Can an IDC intervention in a blended learning setting effectively enhance the listening and speaking proficiency of Chinese college students compared to traditional teaching methods?

Interest-driven creator theory

The strength of IDC lies in promoting student autonomy (Li & Liu, 2022). In this research, the focus is on establishing the IDC within the context of ESL/EFL classrooms, with a particular emphasis on the longitudinal development of learning interest toward habitual behaviour. This approach is tailored to English listening and speaking learners in China, allowing them to cultivate and pursue their own individual interests (Muhria, 2022; Wong et al., 2020). The IDC framework comprises three key components, which are explained upon below.

The trigger interest loop is the initial phase of the IDC framework, focusing on learners' interest in listening and speaking. Learners demonstrate their interest through various actions, including triggering, immersing, and extending their involvement in language activities (Jia et al., 2020). Educators avoid viewing students' interests as a static theme, and instead delve deeper into understanding them through in-depth investigation. To foster student-centred learning, it is recommended to employ an IDC instructional design (Hashim et al., 2021). When learning is enjoyable and effective, students are motivated to accumulate proficiency and skills with passion and curiosity (Hwang et al., 2020). The IDC provides a solid and valid foundation for research and recommendations, addressing growing interest in knowledge creation, problem-solving through habits formation, and nurturing interest-driven creators, specifically among learners. (Cortese, 2022).

The driven for creation loop is the second IDC loop, which entails listening and speaking learning practice, objectives, and procedures. This stage is crucial as students' sense of accomplishment contributes to the development of their self-efficacy (Ma, 2022). Additionally, "the driven for creation" loop for learning creation as highlighted by Nguyen et al. (2022), is interconnected with learning productivity and maintenance of self-efficacy. During this loop, the process involves observing and retaining information using elastic memory and comprehending the learning material (Torabi et al., 2019). Figure 1 below illustrates how imitation (Liu et al., 2018; Tangkaratt et al., 2020) plays a significant role in paving the way for the subsequent invention loop.

Notably, when an unusual occurrence arises, it serves as a trigger for the recreation process. The creation of a habit loop involves the cultivation of specific listening and speaking that build upon learners' existing behaviours. Integrating these behaviours into instructional objectives is key to enhancing learning achievement. This creator loop dedicated to fostering learning habits, offers dynamic strategies for lifelong learners

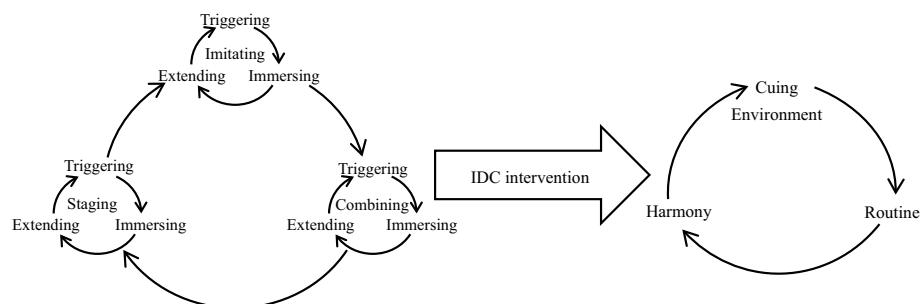


Fig. 1 IDC learning pattern

seeking English proficiency or employment skills (Robinson et al., 2020). This approach, known as the "creator loop for learning habits" (Fiorella, 2020), is a cost-effective means of developing and maintaining social inclination within established social contexts. As individuals' learning behaviour directly influence their performance, adopting a positive attitude towards learning becomes essential (Chan et al., 2019).

Individuals' listening and speaking learning, when approach methodical circulation, can serve as a predictor of their creative process as they consistently and steadily progress (Chen et al., 2020). These criteria offer desired valuable guidelines for practicable interventions, as illustrated in Fig. 1. The formation of learning habits (Marien et al., 2018) typically occurs through a psychological process that involves learners' cognitive capacities and affective states. To adapt to similar situations, learners need an internal mechanism of continuous habit intervention (Byrne et al., 2021). This mechanism facilitates the development of sustainable learning practices, prompt the adoption of new behaviours, and eventually shapes actions and form the habit of learning.

English listening and speaking proficiency

Listening proficiency, as described by Xue et al. (2022), pertains to the learning behaviours associated with college students' L2 listening that are driven by their interest, utilization of authentic resources, and positive beliefs. The performance in L2 listening proficiency is greatly influenced by the perceived relevance and value L2 learners assign to their listening skills, particularly in relation to practical training and available resources (Teo, 2019).

Chinese private university students often face challenges in foreign language proficiency (Lee et al., 2022). However, they compensate for their expression deficiencies by actively working towards acquiring a competent level of English-speaking skills (Sun, 2022). Speaking proficiency involves not only the ability to choose and arrange sounds in a language (Zhou, 2021), but also understanding how these sounds function in English, and what it means to effectively communicate in English-speaking contexts. English-speaking proficiency plays a crucial role in helping college students produce accurate and natural sounds (Meade, 2020).

IDC in blended learning (BL) settings

BL settings, as discussed by Abugohar et al. (2019), integrate traditional face-to-face instruction with online and digital learning pedagogy in the context of listening and speaking. By combining the strength of both traditional and online learning environments, BL settings aims to enhance student engagement, learning performance, and academic achievement in listening and speaking (Islam et al., 2022). These settings often employ a flexible blended approach (Faustino & Kaur, 2021), which establishes a learning environment that includes various weekly activities focused on listening and speaking. Students participate in traditional classroom sessions to interact with instructors and peers, while also having online access for activities such as discussions and interactive peer review, and feedback.

The IDC online session was scheduled asynchronously during the weekends, allowing learners to tailor their own pace and allocate time for their listening and speaking learning journeys. The IDC instructor utilized various online learning management

systems, such as WeChat, Dingtalks, and social media platforms, to monitor and validate the completion of learning activities. To assess student listening and speaking proficiency, the instructor employed a combination of formative assessments like weekly class participation and summative assessments such as listening and speaking exams and assignments.

The IDC course design incorporates flexible BL settings within pedagogical loops (Fig. 1). This design includes learner-friendly mobile learning to increase students' listening and speaking interest and perception in learning English (Rahmawati, 2022). The approach involves various activities, such as previewing and reviewing authentic video materials based on individual interest; attending in-person listening and speaking sessions and participate in online sessions for progressive content on listening and speaking skills development, including mimic role-play. Students then demonstrate their learning proficiency through assignments and exams a fostering effective learning habit.

In addition, the course design included online and in-person note-taking strategies to address challenges in listening and speaking. Roleplay techniques and the utilization of memes were extensively utilized to facilitate learning, while digital resources linked to the IDC were used to reinforce language skills through daily environmental activities (Sholihah et al., 2021; Zhonggen et al., 2019). The effectiveness of flexible settings within the course will be ensured through performance evaluations (Hasan et al., 2022). Consequently, it is necessary to employ a suitable measurement method, such as CEFR, to evaluate the efficacy of the flexible blended setting strategy (Solodka et al., 2022) employed in the English IDC course in this study.

These settings enhance college students' problem-solving, rational, analytical, and critical thinking abilities in the context of English learning (Chowdhury, 2019). Consequently, their proficiency is positively influenced, and their interests are interwoven into the learning process, leading to the development of new learning techniques or habits (Cai & Chen, 2022). Additionally, teachers can provide timely, objective, and accurate feedback to college students (Lim & Graham, 2021).

Based on the previous discussion, the proficiency in listening and speaking skills in the IDC-based approach is influenced by individual interactions in both productive and receptive aspects. In a higher education blended setting, it is crucial to foster target proficiency by connecting it to natural interests and developing practical habits consistently and promptly. Throughout the IDC loop circulation, learners' listening and speaking proficiency improves and self-efficacy is cultivated, even with less dominant teacher support.

Methodology

The objective of this study was to design an IDC English course using a blended setting and to apply a quasi-experiment to verify that it improved Chinese students' English listening and speaking proficiency. A mixed-method approach (Hirose & Creswell, 2023), incorporating standardized tests and semi-structured interviews, was employed at the research site from September to December 2022. The framework developed in this study has both reference and practical value for similar higher education context (Shannon-Baker, 2016).

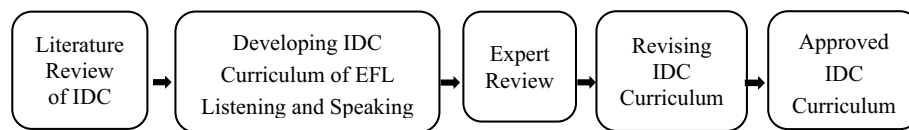


Fig. 2 Research framework step 1: IDC curriculum development

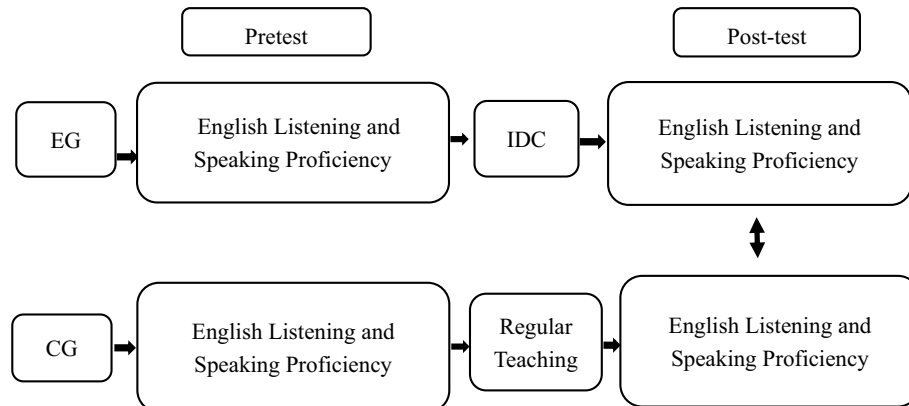


Fig. 3 Step 2: A quasi-experimental design in 2022

Additionally, the implementation of the time series quasi-experimental approach (White & Sabarwal, 2014) has enhanced the internal and external validity of the research design. Scholar's evidence (Lutfi et al., 2022) suggests that the development of a curriculum for the higher education context should involve two primary stages. Accordingly, the IDC course underwent expert reviews and a finalized setting (Wong et al., 2020). Scholars (Chan et al., 2018, 2019) have proposed that the effectiveness of such courses should be tested on Chinese college students. Stage 1 involved the development of the IDC course by means of expert validity review, based on educational research (Lufri et al., 2018), in August 2022, as shown in Fig. 2.

Stage 2 involved implementing the framework of a quasi-experimental design with a non-equivalent control group for IDC listening and speaking courses that incorporated adaptive learning skills. The study included two groups of ESL/EFL college students: an experimental group (EG) consisting of three classes which received the IDC intervention and the control group (CG) consisting of three classes which accepted the traditional English instructional approach as shown in Fig. 3. The independent variable was IDC course delivered in a blending setting, while the dependent variables were a pretest and a post-test scores to evaluate English listening and speaking proficiency. Control variables included instructional methods, teaching time and contents.

Participants

The quasi-experiment was conducted in Yunnan, China, involving a total of 210 college students. There were informed clearly and asked for their agreement to participate in the research, and 210 of them agreed with signing informed consent letter. A total of 106 of these students were allocated to the research treatment, and the rest 104 were assigned to the control group. The groups were randomly divided to the settings. Their

average age was 19 to 21, and there were 27 males and 183 females. The gender ratio was approximately 1.3:8.7, and they were all in their first year of college as English majors. According to CEFR, the students in both groups reached the A1 level selected before the pretest, as shown in Table 1.

A total of 210 participants were involved, with 106 of them were assigned to the IDC-based English course intervention as the experimental group (EG), and the remaining 104 were allocated to the control group (CG). Both groups took regular English courses, but with different instructional approaches. The EG accepted the IDC-based training, while the CG received lecture-based.

Implementation of IDC English course

As the single intervention advanced, the sequence of the IDC intervention was developed into three phases with prolonged steps. In the initial phase of the IDC intervention, the interest loop, the students took an active role in the learning process by considering various questions. For example, they reflect on what strategies the teacher or researcher can employ to spark their interest in listening and speaking. Additionally, they explore how to maintain their engagement and immersion throughout the learning journey, specifically in the context of listening and speaking skills. Lastly, they consider what supplementary materials and extracurricular activities might be beneficial for enhancing their proficiency in these areas.

The aim of the first and second phases was to develop the students’ listening and speaking skills through the ‘interest loop’ and ‘driven creation loop’. In the second phase, the focus shifted to sharing specific interest targets within each course session using the ‘learn, play, do model’ (Salih, 2019; Zain, 2021; Zain & Bowles, 2021). This approach aimed to enhance real-life practice opportunities for learners by encouraging their active involvement in language learning through the driven creation loop. During this stage, college students were allowed to make English errors and flaws in order to enhance the learning experience within a mobile-assisted language learning setting (Alenezi, 2021; Chatterjee, 2022).

In the third phase, the objective was to enhance the ‘creation for learning habits loop’ by incorporating rewards and feedback to acknowledge the progress made by college students in their listening and speaking skills. This phase aimed to promote the development of appropriate learning habits. By utilizing their prior learning skills, the subsequent course was tailored to maximize the students’ creativity in learning and to establish triggers for habit formation.

In the final stage of the learning process, college students’ language learning skills are refined, and their habits are nurtured to reach a mature level within a blended language learning environment (Chan et al., 2019; Daniel, 2020). Following the completion of the

Table 1 Statistical description of the participants

Group	Age	Major	Females	Males	Total	Proficiency level
EG	19–21	English (Freshmen)	90	16	106	A1
CG			93	11	104	

course, students have the opportunity to reflect on their overall performance, engage in class discussion, provide feedback on the course, and express their appreciation, fostering a “creator loop for learning habits” throughout the semester (Looi et al., 2023). The conceptual representation of this loop is illustrated in Fig. 4 below.

The design depicted in Fig. 4 is of significant value to the research questions at hand and holds applicability within a similar and potential HEI context (Looi et al., 2023). Additionally, the utilization of a quasi-experimental approach (Shannon-Baker, 2016; White & Sabarwal, 2014) strengthens the internal and external validity of the research design. In this study, the design was consistent with the course curriculum from December 2020 to September 2022. Trained teachers efficiently executed the 16-week session procedure and promptly reported any student-related challenges or difficulties to the principal researcher.

Intervention

The IDC course in this study was developed based on expert reviews and adjusted according to findings from previous research (Wong et al., 2020). As suggested by Chan et al. (2018) and Chan et al. (2019), it was important to test the courses on Chinese college students. Therefore, the participants consisted of ESL/EFL college students from six administrative classes, who were divided into an experimental group (EG) and a control group (CG). Prior to the experiment, both the EG and CG students exhibited low motivation and were at the A1 level in the proficiency test. To address this, the research followed the processes and orientation outlined by Farsani et al. (2021) to enhance the study’s learning objectives. The IDC course design focused on improving students’

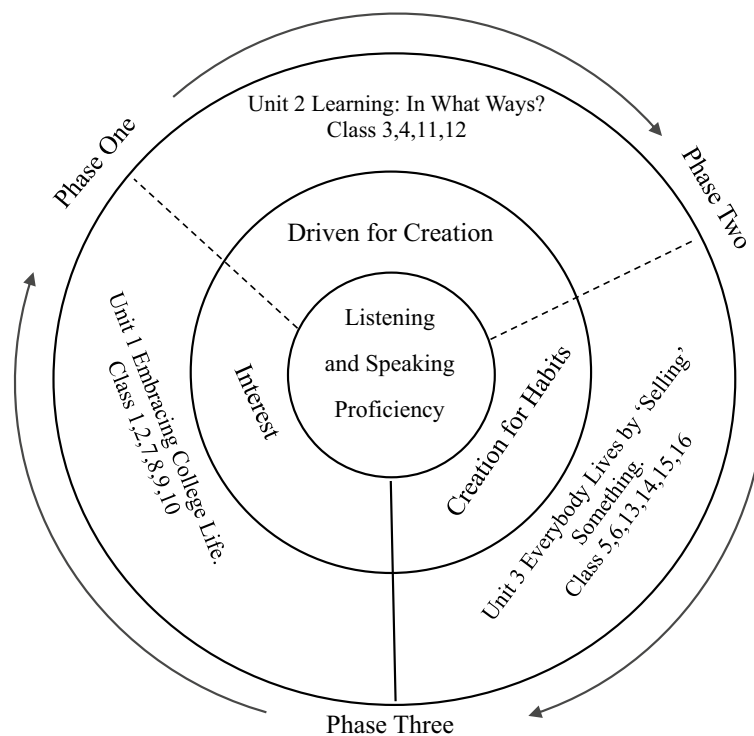


Fig. 4 IDC course design in semester 2022

listening and speaking proficiency, as well as catering to their individual interests and learning habits (Chen et al., 2019).

In the quasi-experimental design, both the EG and CG students were given the same technological resources and utilized mobile-assisted language learning platforms such as WeChat, Dingtalks, and SM during 1.5-h lessons (Nami, 2020). The CG served as an active control group to examine the effects of the placebo intervention (Chen & Chang, 2021). The EG followed IDC pedagogical settings and aimed to improve listening and speaking proficiency through activities like presentation, roleplay, and teacher roles as facilitators, providers, and coordinators, fostering active student engagement and building interests and habits. In contrast, the CG had a teacher-cantered approach and followed a conventional blended setting for listening and speaking, involving blended teaching, presentation, roleplay with the receivers, and passive learner roles for students. Each group had two teachers assigned to conduct teaching. Before the intervention, both teachers underwent a 15-h training program to familiarize themselves with the course objectives, teaching approaches, activities, evaluations, and their respective responsibilities in the classes.

The course designed to span 16 weeks, with one 2-h lesson per week, resulting in a total of 16 lessons. The CG followed by parallel schedule. The independent variable in this study was the IDC English course. Figure 5 illustrates the IDC intervention, which was divided into three phases and consisted of seven consecutive research steps.

The main objective for teachers in the interest engagement aspect of IDC was to act as facilitators by posing thought-provoking questions. For example, the teacher or researcher would consider what activities or tasks could be assigned to college students in order to ignite their interests. Additionally, they would explore how to ensure students remain fully engaged in their learning process and whether this sense of immersion extends beyond the classroom. The course would incorporate extracurricular materials and activities designed to cultivate and sustain student interest. Determining what is necessary to develop and generate interest in the habit would be a crucial consideration for the teacher or researcher in this context.

The second step involved determining the student's range of interest and narrowing it down further to specific interest targets for each session in a blended learning format (Salih, 2019; Zain & Bowles, 2021). Additionally, this phase worked on enhancing opportunities for learners to engage in interest-based by strengthening their adaptive learning skills in language acquisition, which formed the foundation of a "driven loop for learning creation". In order to establish a connection with the content within this "driven loop for learning creation", college students were encouraged to generate adaptive learning

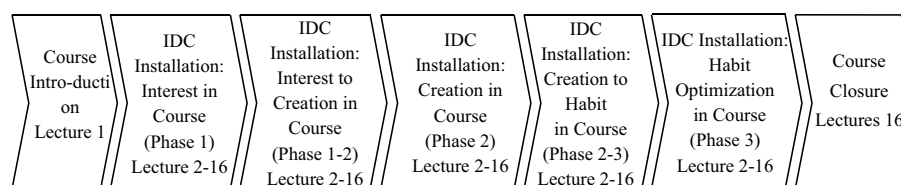


Fig. 5 Intervention in Semester 2022

outcomes. It should be noted that errors and flaws were accepted during this stage to enhance the learning experience in blended settings (Alenezi, 2021).

The transfer step involved enhancing the 'driven loop for learning creation' by incorporating incentives and feedback to acknowledge the progress made by college students in developing adaptive learning habits. Additionally, a subsequent course was designed for college students based on their prior learning skills, aiming to maximize their creative thinking and trigger the formation of adaptive learning habits. These habits, which correspond to advanced adaptive language learning skills, were nurtured to maturity within a supportive environment (Chan et al., 2019) in the context of blended language learning settings (Daniel, 2020). Upon completing the course, college students were able to assess their overall performance (Taylor et al., 2021), engage in class discussions, provide valuable feedback on the course to trained teachers and principal researchers, and express their gratitude throughout the semester to contribute to the development of a 'creator loop for learning habits.'

Data collection and analysis

English language proficiency test

Before and after the research treatment, this study used the Exam English (standardized according to CEFR) as both the pretest and posttest. The Exam English is a tool for assessing language proficiency of ESL/EFL learners based on the CEFR level, and it describes the achievement of learners across different countries. Additionally, the A2 and B1 level listening and speaking exams were administered as pretests and posttests to evaluate English language progress of both the EG and CG before and after the intervention.

The listening test in this study consisted of four on-site sessions, each lasting 30 min. College students participated by filling out an answer sheet. The test included four sections, with 25–30 multiple-choice and fill-in-the blank questions. These questions were based on real-life conversation contexts, such as borrowing a book from a library or asking for academic help from peers and teachers. To reach the A2 level, College students needed to answer over 15 questions correctly.

The section of speaking on-site test in this study consists of three parts, with a total duration of 15 min. During the test, individuals engage in a conversation with an examiner discussing specific topics that are relevant to the real world, such as family or college life. The first part involves answering general questions about the respondent and their current situation. Following that, there is a two-minute discussion on a particular subject related to current or social issues. The third section builds upon the topic discussed in Part two. In order to reach the A2 level in the speaking test, college students must demonstrate fluency without significant pronunciation, vocabulary, and grammar mistakes.

Semi-structured interview

In line with the quantitative results, the semi-structured interview was conducted to gather in-depth feedback from students in the IDC. The purpose of the interview was to explore whether students perceived any enhancement in their English speaking and listening proficiency as a result of the intervention. A total of 16 students from the EG were

invited to participate in an online semi-structured interview conducted after the posttest during the fall semester of 2022. The qualitative tool utilized in the interview focused on investigating students' perspectives regarding the IDC intervention, and their perceived improvement in listening and speaking learning proficiency. This exploration was carried out through seven main questions, which are detailed in Table 2 below.

The interview questions explored the key dimensions, as identified through the reviews conducted by experts (Gumbheer et al., 2022). These questions focused on specific components of the theme analysis, including interest creation, the drive to foster learning, and the development of learning habits for listening and speaking learning proficiency (Chen et al., 2020). The validity of these questions was ensured through the anonymous expert reviews, which showed that the kappa values ranged from 0.80 to 1. The approval of the interview questions involved a panel of eight experienced professionals with over 15 years of occupational experience, including full-time instructors and administrative staff in the field of English at Chinese HEIs.

Qualitative data were collected through semi-interviews conducted at scheduled times and locations, such as offices, institution, and lounges during weeks 15–16, in December 2022. Thematic coding was then used to analyse the data gathered from interviews conducted during weeks 16–17 of the autumn semesters of 2022. The principal researchers utilized Nvivo to prepare a comprehensive transcript analysis report, which included transcribed interview scripts for coding purpose and potential copies for the interviewees. This research specifically focused on conducting semi-interviews with various key informants who were actively participating in the program (Husband, 2020). The participants engaged in individual interviews that lasted approximately 30 min with the option for a second interview if necessary.

The pretest was conducted by the trained teacher in week 2, followed by the administration of the posttest to both the EG and CG during the 14th week. Subsequently, in the third and fifteenth weeks, the principal researcher collected the quantitative data and analysed the test results. Statistical analysis was then employed for further examination. Additionally, to systematically organize the qualitative data, thematic coding was applied to analyse the qualitative data.

Table 2 Interview Questions

No	Question	Theme
1	Please describe your learning experience of this course this semester in keywords: interest, learning creation or habit. (why, how)	IDC
2	What were your expectations for this course? Has it reached your expectations? (why, how)	Listening and speaking proficiency
3	How you want to use the skills outside the classroom after finishing this course? (why)	Interest loop/driven for creation loop
4	What environment would you use the skills in? (why, how)	Driven for creation loop/creation for habit loop
5	What was your listening and speaking improvement from the course? (why, how)	Listening and speaking proficiency; IDC
6	What learning habit do you have that actually works for you from this course? was it helpful? (why, how)	Creation for habit loop; Listening and speaking proficiency;
7	What further comments do you have for this course? Any content or form to improve the course? (why, how)	IDC; Listening and speaking proficiency

In order to ensure the practical examination of this research, it was crucial to design to the experiment with measures that would minimize deviation and risk to internal validity (Maciejewski, 2018). To achieve this, the principal researcher appropriately trained two professional teachers for the specific course implementations, the experiment’s success and accurately forecast the dependent variable in this study, as approved by the experts’ team and the college’s teaching affirmed office. The course interventions took place from the end of August to the end of December 2020. The trained teachers then applied double-blind test designs on-site as per the research purpose of the experiment.

To minimize the potential effects of bias on the outcomes of the experiment, internal validity was maintained for both the experimental and control groups during the blind test (Misra, 2012). The students were unaware of the specific test distributions between these groups, but they adhered to and completed the course objectives as outlined in the study. Class management and instructions were carefully regulated to control for other variables that could influence the results. The study measured several dependent and independent variables, including levels of English proficiency, session time, teachers’ support, teaching materials, and the impact of effects. The internal validity of the study ensures that the results accurately reflect the intended conditions (IDC). As a result, the research outcomes align robustly with the definitions and forecasts of IDC.

Results

The semester, which lasted from September 2022 to December 2022, spanned 16 weeks. A total of 210 students participated in both pre- and post-tests, which assessed their listening and speaking proficiencies through online tests and interviews. Following the posttest and semi-structured interviews, the collected data underwent a statistical analysis using independent t-tests, paired sample t-test, and ANCOVA for the English proficiency test. Thematic analysis was also conducted using Nvivo (Gunbayi, 2020).

Quantitative results

To gain insight into the learners’ listening and speaking ability, an independent sample t-test was initially applied to examine their performance. The means and standard deviations of the EG and CG, as determined by the analytical results of the independent sample t-test are presented in Table 3. Specifically, the variables in this study are listening and speaking learning proficiency. English was used for both the pretest and posttest in order to assess listening and speaking proficiency of the students in the EG and CG at the beginning of the intervention and to track their progress in learning English based on the quasi-experimental design, as outlined in Table 3.

Table 3 Results of Independent sample *t* test listening and speaking pretest

Variables	Tests	EG (n = 106)		CG (n = 104)		<i>t</i>	<i>p</i>
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Listening	Pretest	132.359	7.244	132.019	4.034	0.418	0.676
Speaking	Pretest	134.528	11.138	135.192	5.571	0.545	0.587

n = 210. EG = Experimental Group; CG = Control Group. *M* = Mean, *SD* = Standard Deviation

The pretest was focused on assessing the listening and speaking learning proficiency of the students. According to the results presented in Table 3, there was no significant difference observed between the EG ($M=132.359$, $SD=7.244$) and the CG ($M=132.019$, $SD=4.034$) in terms of listening proficiency. Similarly, there was no significant difference found between the EG ($M=134.528$, $SD=11.138$) and the CG ($M=135.192$, $SD=5.571$) in terms of the speaking proficiency during the pretest, indicating that the EG and CG were at the same level of listening and speaking proficiency at the A2 level before the IDC intervention, meeting the pretest condition of homogeneity ($p>0.05$).

A paired-sample *t*-test was conducted to examine whether there was a statistically significant difference in students' learning proficiency, specifically in their listening and speaking skills, before and after the IDC intervention. The data from both the EG and CG were analysed to determine whether there was a significant improvement in the posttest scores compared to the pretest scores. Instead of focusing on the progress of the CG students, the expected results were used to evaluate the increase in performance for the EG students after completing the study. Table 4 presents the paired-sample test results for the EG students' listening and speaking abilities in both the pretest and posttest.

The listening proficiency of the EG significantly improved in the posttest compared to the pretest, as indicated by an increase in the mean and standard deviation. For instance, the results of the posttest ($M=159.811$, $SD=7.169$) showed a significant increase ($t=29.238$, $p=0.000<0.001$) compared to the pretest. Similarly, in terms of speaking proficiency, there was a substantial growth in the EG's abilities after the IDC intervention. The posttest score ($M=155.094$, $SD=7.070$) increased significantly ($t=19.203$, $p=0.000<0.001$) compared to the pretest score ($M=135$, $SD=10.543$).

Concerning the CG, the results of the paired-sample *t*-test for their listening proficiency showed a modest improvement from the pretest ($M=132.019$, $SD=4.034$) to the posttest ($M=141.250$, $SD=8.207$). Nevertheless, this improvement was statistically significant ($t=11.469$, $p=0.000<0.001$), suggesting that the CG made slow progress in their listening skills without the IDC intervention. On the other hand, there was no significant growth ($t=1.044$, $p=0.299$) in their speaking in the posttest ($M=135.865$, $SD=6.011$), indicating limited growth in the CG's speaking scores. Therefore, without the IDC intervention, the CG did not make progress in speaking, as shown in Table 5 below.

In the subsequent analysis, a one-way ANCOVA was used to examine potential significant differences between the experimental and control groups in the posttest scores while controlling for the pretest scores. The homogeneity of listening and speaking skills was assessed in ANCOVA, with pre-test scores considered as independent variables,

Table 4 Results of paired-sample *t* test of the EG's listening and speaking test

Variable	<i>M</i> (<i>SD</i>) Pretest	<i>M</i> (<i>SD</i>) Posttest	<i>t</i>
Listening	132.359 (7.244)	159.811 (7.169)	29.238***
Speaking	134.528 (11.138)	155.094 (7.070)	19.203***

$n=106$. EG = Experimental Group. *** $p<.001$. *M* = mean, *SD* = standard deviation

Table 5 Results of paired-sample t-test of the CG's listening and speaking test

Variable	<i>M (SD)</i> Pre-test	<i>M (SD)</i> Post-test	<i>t</i>
Listening	132.019 (4.034)	141.250 (8.207)	11.469***
Speaking	135.192(5.571)	135.865 (6.011)	1.044

n = 104. EG = Control Group. ****p* < .001. *M* = Mean, *SD* = standard deviation

and interactions between pre-test and group were tested. The results indicated that interactions between the pre-test and groups were not statistically significant, suggesting no significant differences between the pre-test scores and the groups in terms of listening ($F = 0.335$, $p = 0.563 > 0.05$) and speaking ($F = 2.031$, $p = 0.156 > 0.05$).

Consequently, a one-way ANCOVA was used to assess the statistical differences in the English listening and speaking proficiency of both groups. The results revealed that the course intervention significantly improved the students' listening and speaking abilities. The analysis exhibited significant differences for both listening ($F = 307.809$, $p < 0.001$) and speaking ($F = 510.643$, $p < 0.001$) when comparing the pre-test and post-test scores, as indicated in Table 6.

Table 7 presents the mean and standard deviation of the listening and speaking scores in the posttest, illustrating the impact of the pretest's constraints on the posttest results. Notably, a significant difference was observed between the adjusted posttest scores for listening skills in the EG ($M = 159.410$, $SD = 9.807$) and the CG ($M = 141.250$, $SD = 8.207$), with the EG displaying higher scores. A similar distinction in adjusted posttest scores for speaking was observed between the EG ($M = 155.094$, $SD = 7.070$) and CG ($M = 135.865$, $SD = 6.011$).

The adjusted posttest scores presented in Table 7 demonstrate the enhanced gains in listening and speaking proficiency within the EG were notably greater than

Table 6 Results of one-way ANCOVA of the listening and speaking test

Variable	Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Listening	Pretest	266.799	1	266.799	4.577	0.034
	Group	17,943.547	1	17,943.547	307.809	0.000
	Error	12,066.927	207	58.294		
	Total	4,794,500.000	210			
Speaking	Pretest	980.081	1	980.081	25.388	0.000
	Group	19,713.024	1	19,713.024	510.643	0.000
	Error	7991.091	207	38.604		
	Total	4,478,500.000	210			

****p* = .000 < .001

Table 7 Summary of one-way ANCOVA of the listening and speaking test

Variable	Group	Adj. <i>M</i>	Adj. <i>SD</i>	<i>n</i>
Listening	EG	159.811	7.169	106
	CG	141.250	8.207	104
Speaking	EG	155.094	7.070	106
	CG	135.865	6.011	104

n = 210. EG = Experimental Group; CG = Control Group. *M* = mean. *SD* = standard deviation

those observed in the CG. These findings provide strong evidence of the significant improvement in listening and speaking proficiency within the EG, as indicated by the posttest scores ($p < 0.001$). In contrast, the CG showed moderate growth in listening proficiency, but there was no significant increase in speaking proficiency on the post-test. These comparative results highlight the transformative impact of the IDC intervention, which effectively elevated both listening and speaking proficiency within the EG in comparison to the CG, which did not receive the IDC intervention.

Qualitative results

The semi-structured interviews aimed to investigate the impact of IDC on the listening and speaking proficiency in the EG students after the post-test. The interview data underwent coding reliability assessment (Byrne, 2022) to analyse three domains: (1) IDC course prerequisites for EG students; (2) the most effective IDC loop for EG students; and (3) the contexts in which IDC was used the most. All 16 interview participants, consisting of 13 females and 3 males with 6 years of English learning experience, shared the characteristic of being IDC ‘novices’.

Q1: What is your learning interest in the IDC course?

The first question (Q1) explored the theme of interest loop in listening and speaking learning proficiency of the IDC course. Five sub-themes emerged from the analysis: interest is the core foundation; interest led to advanced listening and speaking proficiency; interest links to further learning; interest initiated the advanced listening and speaking proficiency; a sustainable state of curiosity; interest naturally aroused when they were engaged in the interest loop. The five sub themes were presented in Table 8, categorized according to the interest loop.

Based on the interview findings, Participant 4 and 13 highlighted the importance of interest in maintaining and improving listening and speaking skills. They expressed that their engagement in the IDC course was driven by their desire to make progress in these areas, and they believed that responsible students should naturally possess skills related to IDC. Participant 13 specifically noted that the concept of learning interest aligns with the characteristics of the IDC theoretical loop circulation, emphasizing its significance as a prerequisite for effective engagement.

Participant 13

I think interest is the best teacher, and if you don't have an interest in the course,

Table 8 Interest loop

Emergent themes	Sub emergent themes
Interest loop for listening and speaking	1. Interest is the core foundation 2. Interest links to further learning 3. Interest initiated the advanced listening proficiency 4. A sustainable state of curiosity 5. Interest naturally aroused when they were engaged in the Interest loop

you won't want to study it (listening), and if you're just into it, um, it's achieved. You love the course a lot, and then you get the urge to learn it (listening). Even if you have all sorts of difficulties, just remember this interest, and try, and then you will get support.

Participant 1 and 8 shared their perspectives on the teacher support provided in the IDC. They expressed that the high level of teacher support in IDC compensated for the cumulative proficiency and self-efficacy. In particular, Participant 8 emphasized the importance of personal interest in language acquisition, stating that one's ability to maintain and enhance target language skills is closely linked to their level of interest in the learning process.

Participant 8

It's about that (interest) oh...the spoken language aspect. I think it's amazing to talk to someone in English when you can speak it very fluently and then when you finish an English conversation, it's very fulfilling. So, I'm still interested in speaking fluently (P8)

Participant 2 and 5 acknowledged that interest played a vital role in supporting their learning efforts. They emphasized that the presence of interest motivated them to delve deeper into the course content, seeking meaningful connections that aligned with their learning experiences and expectations. Participant 5 further expressed that the interest not only facilitated the accumulation of in-depth and long-term speaking skills but also contributed to his or her personal development:

Participant 5

These (speaking skills) come more from interest, I guess, because interest was a big help to me. Usually, when I talk to other people in English, most of them tell me about their hobbies and so on, and then if I know more about that, I can understand more and speak more fluently.

Q2: Which phase of IDC course improved you listening and speaking most?

The second theme focused on the concept of the creation loop, which involved the enhancement of listening and speaking proficiency through reinforcement and efforts aimed at creating anticipated behaviour. The majority of interviewees expressed that the endeavours in this area established a sustainable chain with positive impacts on their personal growth during and after the IDC intervention. Two main themes emerged: listening proficiency and speaking proficiency. Subsequently, five sub-themes were identified based on learning creation loop in relation to listening and speaking proficiency, as outlined in Table 9 below.

Theme A: Listening proficiency.

The first theme focused on listening proficiency and highlighted five key aspects: (1) the key hub for improving listening skills; (2) learning creation reinforced listening proficiency; (3) learning creation is useful continuum and extension in proficiency; (4) learning creation resolved listening proficiency problems; (5) a practical solution on listening proficiency previously neglected. The IDC intervention incorporated elements of interest and learning creation to facilitate the accumulation of

Table 9 Driven for creation loop

Emergent themes	Sub emergent themes
A. Listening proficiency	A1. The key hub for improving listening skills A2. Learning creation reinforced listening proficiency A3. Learning creation is useful continuum and extension in proficiency A4. Learning creation resolved listening proficiency problems A5. A practical solution on listening proficiency previously neglected
B. Speaking proficiency	B1. The link for improving speaking skills B2. Learning creation strengthened speaking proficiency B3. Learning creation is useful continuum and extension in proficiency B4. Learning creation resolved speaking proficiency problems B5. A better extension on speaking proficiency

sufficient listening skills within a 16-week timeframe (as depicted in Fig. 5). The duration exceeds what is typically required in traditional educational environments. Participant 3 emphasized that the growth of listening proficiency was attributed to the knowledge of reinforcement and personal endeavour.

Participant 3

The key is to learn to create, I think. Because learning to create listening skills is through the teacher and the provision of resources, and then you have to solve your problems on your own; figure out how to solve them using listening skill to express yourself.

Participants 6 and 15 reported noticeable improvements in the listening proficiency, particularly in terms of accumulating listening skills. Participant 15 expressed satisfaction with her active engagement and specific progress within the context of listening creation.

Participant 15

I think learn to create! I think. Because learning to create (listening), was through the teacher, and the provision of (resources), and then you have to solve your problems on your own. Figure out how to solve them (listening skills) meaning.

Theme B: Speaking proficiency.

The second theme exposed the implementation of the IDC intervention within blended learning environments, leading to accelerated improvement in students' learning competence. The sub-themes within this theme were as follows: (1) the link for improving speaking skills; (2) learning creation strengthened speaking proficiency; (3) learning creation is useful continuum and extension in proficiency; (4) learning creation resolved speaking proficiency problems; (5) a better extension on speaking proficiency. These outcomes were achieved by providing students with increased opportunities to actively engage in the IDC course design, following relevant learning circulation (as depicted in Fig. 4), and by reducing speaking anxiety levels. Participant 10 and 12 emphasised how the incorporation of IDC intervention provided them greater flexibility in targeting proficiency training within the blended learning environment. They dedicated themselves to

utilizing learning resources and attempted to integrate blended language learning based on their preference, with the ultimate goal of achieving proficiency in speaking skills.

Participant 10

I think it as gaining new knowledge (creating)... that sentence was not quite translatable (speaking proficiency) uh, if you can't understand, don't know how to translate (speaking proficiency) then, you can uh, use that translator software to kind of translate it (speaking proficiency). Then, I slowly accumulate learning and understand this was how to translate (speaking proficiency), this was how to get it.

Participants 12 recognized the significance of learning creation in developing speaking skills, experiencing how their natural interest led them to achieve new levels of proficiency and self-efficacy instead of relying solely on teacher assistance. Participant 12 also emphasized the importance of investing adequate time and engagement in the process. They found that through learning proficiency creation, they were able to adapt effectively to ongoing learning objectives, gradually reducing their reliance on teacher support while taking advantage of the increasing availability of learning resources withing the college environment.

Participant 12

I think it (learning creation) can be used basically it all works because these courses are, all connected. For example, if we learn this course well, it will help us with our General English course, oral and the exams we will take afterwards. I think it has a fundamental role. You do this and it improves your vocabulary later. It helps a lot, I think.

Q3: Which contexts will you use IDC the most?

The third question focused on analysing creation for learning habits. Following their enrolment in the IDC course, particularly through teacher support and peer collaboration, participants experienced successful attempts at establishing learning habit loops, thanks to the support from teachers and collaboration with peers. These efforts were reinforced through consistent practice, resulting in the organic evolution of habitual engagement within the IDC. The analysis of learning habit creation led to the identification of two themes: listening and speaking proficiency. Both themes confirmed and

Table 10 Creation loop for learning habits

Emergent themes	Sub emergent themes
A. Listening proficiency	A1. Learning habit reshape listening proficiency A2. Learning creation led to listening habit A3. Learning habit determined listening proficiency A4. Learning habit is guideline for proficiency extension
B. Speaking proficiency	B1. Learning habit gained confidence in speaking proficiency B2. A positive and sustainable speaking endeavour B3. Learning habit after learning creation in IDC served greater speaking proficiency

further enhanced participants' proficiency through their sustained engagement in long term habit-based learning, as presented in Table 10.

Theme A: Listening proficiency.

The IDC course provided a conducive context for participants to develop their speaking and listening proficiency, transforming these skills into practical and dynamic abilities. The successful adoption of IDC's interest and learning creation loop further facilitated the development of efficient and replicable learning proficiency, primarily through the cultivation of consistent learning habits. Participants 9 and 16 demonstrated awareness of their phased progress and expressed the desire to maintain a positive mindset and high level of proficiency through their individualized creation loop for learning habits.

Participants 9

I'm still a little bit interested; for example, I can hear fluently, I'm still quite happy and have a sense of achievement, but I think it's more to do with study habits, because I'm a serious person and strive for perfection. So every time I do it (listening proficiency), I focus on quality and quantity.

Participant 16 emphasized that the development of listening proficiency as a habit relies on several factors. These include concise and top-down teacher support, vibrant blended content, and relevant digital guidance. These elements play a crucial role in increasing individual self-efficacy and facilitating progress.

Participants 16

If you borrow from it (teachers support), you can work on your speaking skills and then your speech can become more fluent. For example, we were an all-English class, so in the beginning when the teacher taught in English, I didn't know what it meant, but after a while I could understand most of what she was saying. After a period of time, you will be able to understand most of the teacher's meaning.

Theme B: Speaking proficiency.

The habit of learning driven by interest and the creation process empowers individuals to maintain their learning outcomes and boost their self-efficacy. The purpose of IDC intervention, centred around interest and the creation loop, was to prepare individuals for developing the habit of effective communication. Additionally, it aids in supporting the learning outcomes by aligning with individual's expectation for personal growth.

Participant 7 illustrated that learning creation loop within students can equip them with the necessary skills for personalized listening and speaking habits. Furthermore, it resulted in improved speaking proficiency, aligning with individuals' practical expectations for personal growth. This observation aligns with the design of IDC course, where the teacher plays the role of a facilitator. and students actively shape their habits, aiming to become long-term learners in their desired proficiency level.

Participant 7

If I thought this was just a course, I wouldn't learn, but it's more than just gaining some knowledge from books. It's speaking inside the classroom that the teacher

gives, and then some material outside the classroom. It's not just limited to the textbook, so the learning method was mastered during the oral learning process.

The above excerpt reflects the EG's perspective on different loops observed after the posttest of the IDC course. It indicates that the IDC course successfully enhanced listening and speaking proficiency by means of specific loops.

Finally, a comprehensive structure for IDC course learning proficiencies was developed by combining the quantitative and qualitative results. The design of IDC course allowed students to select activities according to their interests, resulting in higher engagement and motivation through the learning creation process. The creation loop for learning habits, which is part of the IDC approach, helped students reinforce their learning efforts and sustain progress in listening and speaking. Furthermore, the flexibility and personalized learning approach of IDC potentially reduced anxiety and contributed to improved performance in the posttest. These combined factors demonstrate the positive impact of the IDC intervention on students' learning outcomes, leading to enhanced listening and speaking proficiency.

Discussion

To address the first research question, the study focused on the English course syllabus during the 16-week experiment based on IDC in a Chinese college. The researcher found practical and beneficial habit-based learning proficiencies and gathered authentic student feedback regarding teachers' support for self-efficacy, learning objectives, and the use of digital learning tools and resources in China (Looi et al., 2023). IDC encouraged students to self-assess their progress and take responsibility their own learning proficiency (Robinson et al., 2020). By means of interactions with the curriculum, IDC facilitated the development of appropriate long-term aspirations aligned with the curriculum for their particular goals from a proficient EFL perspective.

Compared to conventional course design, the most significant feature of IDC was the emphasis on learning creation after triggering students' interest (Chan et al., 2019). Therefore, the observation, evaluation, and treatment of learning creation should be considered when designing an IDC curriculum. The feedback from the EG aligned with the other findings (Aguilar et al., 2022; Spada, 2022) in a blended setting, indicating that the IDC course provided suitable and enlightening teacher support. Teacher support played a crucial role in promoting self-efficacy among young HEI talent in an extra-curricular context, facilitating target proficiency (Silva et al., 2018; Yasmin et al., 2019). Overall, the IDC English course curriculum for Chinese college students can reinvent, diversify, and integrate the sequence of interest, learning creation, and learning habits in the current course objectives and procedures to increase college students' listening and speaking proficiency. The IDC is a valuable and applicable pedagogical cycle, capable of fostering specific proficiency in a short period of time.

In response to the second research question, it was found that the IDC course effectively developed English skills among Chinese college students by emphasizing the creation loop, while respecting and attending to learners' learning creations based on their interest and learning habits. IDC promoted student-preferred policies by providing distinct, timely, and concise teaching support that valued learning creation between interest and habit. This

form of teacher support further integrated region-specific and sustainable challenges in English course design to improve student learning proficiencies and self-efficacy (Mallillin & Caranguian, 2022). Among the IDC loops, the most distinctive feature was learning creation, which connected with the empirical findings (Purwanto & Hidayad, 2022; Razavipour, 2020). IDC addressed the observable inconsistencies in individual proficiency by providing necessary and interactive learning creation in a real-life context, bridging the gap in learning habit. The blended setting of the IDC course, using the 'learn, play, do model' (An et al., 2020; Hermanto & Srimulyani, 2021), supported student learning creation in a flexible and low anxiety environment, while representing real-life situations as a cue for solution finding.

Therefore, teacher support should acknowledge and enhance language proficiency by recognizing and promoting positive learning creation by students (Ross, 2020). Bourekache and Kazar (2020) previously assembled more IDC features and research findings, concluding that teachers could provide positive, timely and brief support through digital learning systems or platforms to foster the correlation between interest and learning creation outside the classroom. Teachers should also carefully select main systems or additional platforms that are user-friendly and contribute to the best learning proficiency for students (Marks et al., 2021). The IDC course streamlines teacher support in current planning to increase student-centred language proficiency and self-efficacy (Redmon et al., 2021). However, attention should be given to individual learning creation for proficiency enhancement.

Regarding the third research question, the IDC intervention proved to boost listening and speaking proficiency among Chinese college students more effectively than conventional teaching methods by sequentially introducing interest, learning creation, and learning habits. The IDC curriculum anchored and linked real-world listening and speaking contexts of functional proficiency, enabling students to confidently engage in daily English events individually or in small groups. This learning approach (Roschelle & Burke, 2019), facilitated by learning creation, fostered a preference for teacher support during group activities. Self-efficacy played a significant role (Eggers et al., 2021) when summative teacher support replaced the detailed version, as learning creation gradually aligned with listening and speaking proficiency in daily routines, setting the stage for the formation of learning habits. In this manner, the IDC course design established interest as the foundation, intensified and diversified learning creation in a blended setting, and ultimately strengthened students' proficiency and self-efficacy through the development of lifelong learning (Elmahdi et al., 2018; Justiana et al., 2022).

A similar pattern of habit cultivation, as identified by Chien et al. (2022), suggests that traditional teaching methods might not be adequately suitable in the era of digital policy changes in language learning, as the traditional lecture format cannot nurture long-term learning behaviours demanded by EFL learners who seek fast production and immediate consumption (Li, 2021; Li & Lan, 2022). Thus, the IDC course design instructs EG students in the utilization of English learning habits for sustainable purposes. The improved learning habits acquired through IDC assist students in using their learning creations as valuable resources for their future HEI courses or lifelong learning. Recent research (Jeong, 2022) has also demonstrated that a habit-forming approach like IDC can reconcile the neural mechanisms of language learning proficiency in social contexts (Hopp & Godfroid, 2023;

Sadeghi, 2022). Empirically, the IDC intervention significantly enhanced the listening and speaking abilities of Chinese HEI students.

Conclusion

With the IDC course design in this study, students were able to choose the typical tactics and activities they preferred due to high flexibility and low anxiety, followed by personalized learning mastery. The study is consistent with those of current researchers (Gambino & Share, 2023; Gardner et al., 2022); therefore, learning creations in various contexts should be recognized and promoted by teacher support and relevant policy for students to achieve habit-based learning with the relevant, personalized learning proficiency.

The purpose of this study was to incorporate an IDC curriculum into English education to increase Chinese students' sustained listening and speaking proficiency. Students were guided to reorganize, reshape and reinforce their learning habits. They were able to execute brainstorming, problem-solving, hands-on inquiry, and habitual conversations in listening and speaking interactions, which they then integrated into the learning process and their extracurricular activities based on their interests and learning creation. (Ben et al., 2022).

Furthermore, it takes time and effort to mature or alter a conventional agreement in course design. Therefore, EFL teachers in HEIs should collaborate to construct a course for the prospective combinations of English talent to fit their potential and developmental environment and ensure that their English is sufficiently proficient to be internationally competitive in their chosen profession. Interest is the best tutor for a given talent when shifting from content learning to methodological learning (Panasyuk et al., 2022).

Implications

The aforementioned IDC acknowledges the crucial connection between learning creation and habits and abilities. Learning creation represents the phase of active engagement, following an individual's interest in learning and culminating in the continuous endeavour phase. Previously overlooked between learning interest and learning habit, advancement and self-improvement (Renninger & Hidi, 2022). IDC's focus on learning creation allows a deeper understanding of intrinsic learning desire, relevant behaviour, and personal development (Diwan & Vartanova, 2020; Setyosari & Cahyono, 2021). This theory also plays a significant role in HEI course design across various domains. For example, it pertains to HEI social psychology themes (Hernandez et al., 2023), addressing anxiety management by leveraging past positive experiences. Additionally, IDC is relevant to digital behaviour fields, such as knowledge management based on blended learning (Tang & Hew, 2022), target skill enhancement in HEI extracurricular activities (Nantha, 2022), and individual self-assistance professional training to cope with academic pressure (Mackett, 2022). Through this research, the IDC theory expands our understanding the relationship between universal learning interests and practical learning habits by examining human learning creation patterns (Hashim et al., 2021; Muhria, 2022).

In practical terms, IDC offers a novel approach to course design aimed at developing learning proficiency by emphasizing learning creation rather than relying solely on lecture-based teacher support. The principles and procedures introduced by IDC provide systematic approach to nurturing the learning creation between interest and learning, leading to prompt innovation. By implementing this approach, the research has demonstrated improved students' self-efficacy and English learning proficiency in students, focusing on three loops rather than conventional teacher support. This approach also enables the acquisition of various learning skills (Chan et al., 2018, 2019; Chen et al., 2020; Wong et al., 2020), including higher-order thinking skills, knowledge management and lifelong learning, thereby aligning with the social educational objectives for Chinese HEIs. Sustainability research, encompassing digitalized lifetime learning in EFL, recognizes the importance of learning creation in managing large volumes of information (Burston & Giannakou, 2022; Papageorgiou et al., 2022; Yang, 2022). Therefore, this IDC approach can address challenges related to digital learning proficiency and digital pedagogical design (Orsini-Jones et al., 2022) in teaching English to speakers of other languages (TESOL) in China. Moreover, IDC can currently and universally serve as an innovative means of enhancing proficiency through activities (Dillenbourg et al., 2019) such as HEI elective courses, proficiency-based competition training, and specific national test proficiency development programmes. Furthermore, IDC has the potential to reshape the current situation where Chinese HEI students are primarily encouraged to apply their curricular accomplishments in various subjects, while overlooking the critical goal of EFL of extending English learning to extra-curricular settings (Ben et al., 2022). In line with the requirement for HEIs to promote English practice throughout China, incorporating IDC into the English curriculum can also benefit non-English major students (Yuliati & Lestari, 2018).

Limitations

During the COVID-19 epidemic in late 2022, instructional activities in China had to adapt to both online and offline formats. This transformation of the learning environment inevitably led to external intervention or influences, in online EFL classes, it has been observed that students' performance and assessment may vary more compared to in-campus EFL courses due to ongoing distractions in learning sites, concerns about pressure, and potential hardware glitches that go beyond teacher support (Morgan-Short et al., 2018). Furthermore, some researchers (Dağgöl & Akçayoğlu, 2023; Yu, 2023) express concerns about the limitations of measuring traditional face-to-face interactions and debates with others in online courses, as individual differences may not be adequately captured. Although students were expected to thoroughly engage with course content and activities during the 16-week teaching period, some expected more teacher support and group discussions, and external communication challenges were present.

Author contributions

YW is an Education Management Ph.D. student at the Chinese International College, DP University, and a full-time teacher at a private college in Kunming, Yunnan, China. His research interests include second language acquisition education management in higher education and language teaching and learning. P-FC is an assistant professor for the master's and doctoral programs in Education Management of Chinese International College at the Dhurakij Pundit University. She obtained a Ph.D. degree in human development and psychology from the University of London, Institute of Education. Her research interests are higher-order thinking, mental health, cross-cultural adaptation, sustainability, education management in higher education, and language teaching and learning. YW wrote the main manuscript text under the guidance of P-FC. All authors reviewed the manuscript.

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Office of the Dhurakij Pundit University Research Ethics Committee on Human (DPUREC). The Human Research Ethics Committee, Dhurakij Pundit University, Thailand, has exempted the protocol based on the Declaration of Helsinki, The Belmont Report, CIOMS Guideline and International Conference on Harmonization in Good Clinical Practice (ICH-GCP) (Protocol Number: DPUHREC014/65NA).

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No potential Competing interest was reported by the author(s).

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