

From Theory to Practice: The Effects of Co-Blended Learning Approach on Student Learning

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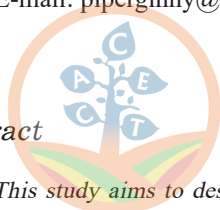
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Abstract

This study aims to describe the implemented effects of Co-Blend Learning on student satisfaction and students' learning outcomes/learning performances in bilingual education. During the 2022-2023 school year, 3 bilingual experimental course cases with Co-Blended Learning were conducted at a primary school in Taiwan. The implementation sequence of Co-Blended learning was considered: into three instructional stages: "Understanding/Participation," "Application/Transformation," and "Sharing/Exchange." The research data were collected from a student satisfaction questionnaire survey and teacher feedback that is based on teachers' observations of student learning performance. Findings indicated that most students have expressed a high degree level of satisfaction regarding Co-Blend Learning. After students received bilingual instruction via the Co-Blended Learning approach, the changes in students' bilingual learning outcomes/ learning performances teachers observed as follows: became more interested in bilingual learning, improved level of class participation, and progress in English communication ability. These clues might provide some supporting evidence for the effectiveness of Co-Blended Learning in enhancing student learning outcomes in bilingual education in Taiwan.

Keywords: *Co-Blended Learning; co-teaching; blended learning; bilingual education; Taiwan*

Introduction

To raise the English proficiency of the public and improve Taiwan's overall competitiveness by 2030, the Taiwan government's executive has actively promoted bilingual education since 2018. Many city governments in Taiwan pay special attention to bilingual education in primary school and junior high school and have invested a lot of resources to establish a good bilingual learning environment in the basic education stage (Liu, 2022; Kao, 2021). They believe such an environment will help students to enhance their bilingual abilities. The bilingual education in Taiwan is based on García's (2009) point of view, that is, in the process of education, two languages are used; and the so-called bilingualism represents the two languages of Mandarin and English (Lin, 2020). The policy of bilingual education aims to create a friendly English learning environment for students in combination with life situations, help students acquire bilingual ability, develop cross-cultural and multilingual understanding, and appreciate human diversity just like García stated (2009).

However, within the actual observation of the education field, the most frequently discussed important challenge facing the bilingual education policy in Taiwan is the huge shortage of teachers in primary school and junior high school (Lin, 2020; Xu & Chen, 2021; Lin, 2022; Liu, 2022; Kao, 2021). The lack of teaching resources such as in-service bilingual teachers and pre-service bilingual teachers has become a big problem for the stability of bilingual teachers in Taiwan's primary and junior high schools. A survey shows less than 10% of non-foreign and non-English teachers in Taiwan can teach bilingually (Wang, 2002). When the number of in-service bilingual teachers and pre-service bilingual teachers can't immediately meet the immediate needs of bilingual education teachers in schools. Some city governments have begun organizing training courses to help in-service teachers improve their bilingual abilities and encourage them to transform into bilingual teachers through advanced training. But the limited number of courses still cannot meet the needs of teachers who want or need training (Cadias, 2019; Lin, 2021; Liu, 2022). Furthermore, such training courses are quite challenging for the current teachers participating. According to media reports (China News Magazine, 2022.12.19), the teachers interviewed said that becoming a professional bilingual teacher they are not easy. We must complete self-enhancement courses, develop the teaching material, prepare the course plan in a short time, and overcome psychological barriers. Busy in-

service teachers will feel worry and anxiety, such situation which is the same as some relevant research results (Kao, 2021).

The second challenge that affects the actual effectiveness the bilingual education in Taiwan is the lack of a long-term, natural, and immersive language-used learning environment for students in primary school and junior high school. Liu (2022) stated that analyzing the teaching results of bilingual education in Taiwan in recent years, whether CLIL or EMI is adopted, the purpose of courses is to increase students' opportunities to contact and use English. According to actual observations (Huang, 2021; Kao, 2021; Liu, 2022; Tao, 2022), most students currently have only a few opportunities or time to practice bilingual communication and interaction in classrooms. The instructional effect would not be enough to allow students to have the experience of actual English communication and interaction in a real situation. If the school can establish a more life-oriented learning situation of bilingual education for students, it will provide more opportunities for students to be exposed to two languages regularly and additionally. Such a learning environment can facilitate students to use both languages as a medium of communication and are willing to communicate in English. Scholars (Lin, 2021) pointed out that more dialogue practice opportunities and practical application experience are conducive to students' language learning, especially in bilingual education.

To effectively address the current challenges of bilingual education in primary school and junior high schools in Taiwan, a new instructional approach designed and continuously tested by field educators has been developed. This new approach, called "Co-Blended Learning", integrates the advantages of co-teaching and blended learning. After three experimental course cases were conducted, several positive feedback and benefits regarding this new approach have been observed. Applying such a new instructional approach in bilingual education might increase the bilingual teaching support resources for teachers and enhance the effectiveness of students' learning. This study aims to explore the results of implementing such a new approach, and respond to the situation with two questions through the research survey: first, what is the degree level of student satisfaction regarding Co-Blended Learning? and second, what are the changes in students' learning outcomes/ learning performances after they received the bilingual instruction via the Co-Blended Learning approach?

LITERATURE REVIEW

The Advantage of Blended Learning

After the pandemic, today, in the world, blended learning is quickly being adopted in each classroom and has already become a new instruction normally. With the affection of internet-based information technologies, learning methods have changed and redefined. Within this framework, online technologies such as discussion groups, Google documents, Web 2.0 technologies, social networking tools, and mail groups might be used in students' activities (Wang, 2010). Teachers can adopt a variety of strategies for interaction between students and teachers in a BL environment. These strategies include synchronous real-time online meeting sessions and asynchronous options for interacting at different times based on the convenience of each partner's time zone. In this way, the state of learning is redesigned to meet the needs of a network platform. Students can use website tools such as Jam-board and Miro for teamwork cooperatively and discussion. Thus, in a blended learning environment, the use of technology transitions from being a great teaching tool to being the actual learning space where collaboration and sharing occur (Cooke, 2013).

Regarding the definition of blended learning, there are many viewpoints. The definition most widely accepted by the public is that blended learning is learning that combines face-to-face learning and online-based learning (Graham, 2006; Hall & Villareal, 2015; Dziuban et al., 2018). Lim et al., (2007) summarize relevant arguments and mention three representative definitions of blended instruction: 1) a learning method with more than one delivery mode is being used to optimize learning outcomes and reduce costs associated with program delivery. 2) any mix of instructor-led training methods with technology-based learning. 3) the mix of traditional and interactive-rich forms of classroom training with any of the innovative technologies such as multimedia, CD-ROM, video streaming, virtual classroom, email/conference calls, and online animation/video streaming technology. Meydanlioglu & Arikan (2014) state the advantages of blended learning according to are the use of more flexible and effective learning spaces and approaches, and the maximization of the use of physical and digital resources in order to foster academic excellence and innovation.

According to Friesen (in Nuruzzaman, 2016), blended learning, in gen-

eral, can be classified into six models: 1) Face-to-face driver: the teacher conveys instruction through digital devices. Each student could learn depending on their speed, because of the Individualized assigned work from the teacher. 2) Rotation: students follow the online learning cycle independently and learn face-to-face in class. The teachers could have a chance to provide students with different digital and non-digital activities. 3) Flex: many learning courses are delivered via a digital platform, and students spend most of their time receiving individualized instruction through online resources. Teachers provide face-to-face guidance and support. 4) Labs: students purely learn via online or digital learning platform systems but in a consistent physical location. Students usually take traditional classes in this model too. 5) Self-Blend: courses and learning activities are done face-to-face. Students could add or extend the learning content through online learning. 6) Online Driver: similar to the lab model, all learning courses and teaching are delivered via a digital platform. Face-to-face check-ins usually aren't required, if it is needed a face-to-face meeting can be scheduled.

Blended learning combines direct instruction, indirect instruction, collaborative teaching, and learning with the support of an individual computer/gadget (Lalima & Dangwal, 2017). Singh and Reed (2001) state that using blended instruction could bring some benefits including improved pedagogy, easy access to knowledge, more interaction among learners, personal presence, cost-effectiveness, and ease of revision of learning content. The six combinations of blended instruction proposed: 1) offline and online learning. 2) self-paced, live, and collaborative learning. 3) structured and unstructured learning. 4) custom content with off-the-shelf content. 5) work and learning. 6) ingredients blending synchronous physical formats, synchronous online formats, and self-paced, asynchronous formats. Based on scholars' perspectives (Graham, 2006; Lim et al., 2007; Hall & Villareal, 2015; Lalima & Dangwal, 2017; Dziuban et al., 2018), blended learning defined in this study is an approach that combines face-to-face instruction with online teaching through digital technology. During the face-to-face learning(instruction) process, students could discuss the material and work that has been assigned in digital technology. With the advantages of the online environment, its flexibility, and unlimited time and space, the student can more interact and exchange with other peers.

The Benefits of Co-Teaching

Blended learning changed the form of classical learning (Husamah, 2014) and the role of teachers (Nuruzzaman, 2016). In a BL environment, the interaction between students, or between students and learning resources can occur anytime and anywhere. On the other hand, that means teachers can utilize information and communication technology to improve the efficiency and effectiveness of learning. Based on this transformation, teachers need to recognize that the focus of teaching shifted from the paradigm of teacher center to student center (Graham, 2006; Moskal et al., 2013). Sukmawati et al., (2020) indicate that to obtain optimal results in blended learning, the teacher must have knowledge about learning strategies and know the characteristics of students. By knowing the characteristics of students, appropriate learning materials can be prepared, both online and offline. It means to facilitate blended learning, teachers must spend more time on training and preparation, which virtually increases their stress and burden at work.

To deal with the problem, co-teaching may be a good solution for teachers to reduce work pressure and burden. Villa et al. (2013) defined co-teaching as “two or more people sharing responsibility for teaching all of the students assigned to a classroom” (p.4). The co-teaching definition involves several constructs referring to teachers’ collaboration when planning, teaching, and assessing student work (Härkki et al., 2021). Sanders-Smith et al. (2021) also stated that co-teaching provides opportunities and learning experiences for children that often go beyond what can be supported by a single classroom teacher. Murata (2002) believed that co-teaching has been repeatedly promoted as a vehicle of change and has been connected to successful school-improvement programs. Moreover, co-teaching brings teachers’ unique perspectives and strengths together to create teaching approaches that would not otherwise actualize (Friend et al., 1993). Therefore, when teachers lack resources, support, and assistance in blended learning, co-teaching is a way to help them through teacher teamwork to reinforce teaching methods and further the learning progress of children with diverse needs. With co-teaching in creating a blended classroom, teachers no longer must face the pressure and the professional development requirements of the new instruction style alone.

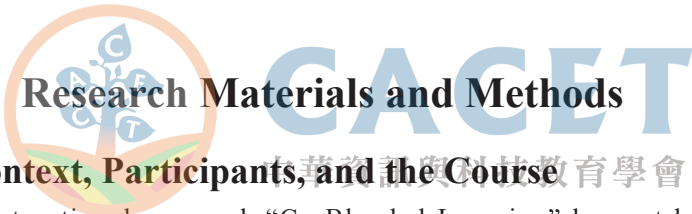
According to Friend et al., (1993), the benefits of co-teaching for teachers may enhance interactions among educational constituents for improved

teacher preparation, professional development, and improved instruction for students. In addition, other benefits (e.g., decreased teachers' workload, learning gains, increased support, and rich lessons) also were found (Baeten & Simons, 2014). Pratt (2014) states co-teaching can create a "compatibility" that facilitates teachers having similar perspectives or using individual strengths to complement each other. During the process of teaching together and collaborative, teachers learn through participating and engaging in a joint activity. Some scholars (Baeten & Simons, 2014; Gardiner, 2010; Wenger, 1998) state when teachers by sharing ideas, provide alternative perspectives and receive advice, they negotiate to mean and learn from each other's knowledge and skills. In this way, they achieve more than in case they would work individually.

Based on the literature studies (Baeten & Simons, 2014; Cook & Friend, 1995; Hurd & Weilbacher, 2017; Murawski & Dieker, 2004; Härkki et al., 2021), there are five distinguished co-teaching models, including: 1) One Teach, One Assist: one teacher has the primary responsibility for planning and teaching, and the other teacher is a support role who moves around the classroom. 2) Parallel Teaching: the instruction is generally planned by both teachers, teachers split the classroom in half to teach, each teacher teaches the same information to a subgroup and they may rotate between the subgroups. 3) Alternative Teaching: one teacher manages most of the class and the other teacher works with a smaller group, while the learning outcome is the same for all students, the instructional strategy is different. 4) Station Teaching: teachers divide the learning contents (or activities) and the class group; each teacher works on a specific learning content or activity with a subgroup of learners spending time at each station. 5) Team Teaching: both teachers share these tasks equitably and actively in the lesson and the management of the discipline with a high degree of planning, trust, collaboration, and communication.

In the above five models, the teaming model has been referred to as the most collaborative model of team teaching (Nevin et al., 2009). According to Helms et al., (2005) describe it is considered true team teaching. Chang & Lee (2010) pointed out that central to team teaching is the sharing of teaching expertise and reflective dialoguing. According to the research findings (in Anwar et al., 2021), teacher-team teaching is associated with student achieve-

ment motivation. This type of study reports many ideas about the importance of maintaining student motivation through teacher collaborative work with colleagues and external parties such as universities, education practitioners, school communities, etc. In this study, this collaborative way of our teacher-team is close to the team-teaching model described by the aforementioned scholars. All the teachers who participated in the project not only worked collaboratively. During the process of teaching and course plan, there is a lot of interaction and dialogue between them. Based on the above, the operative way of co-teaching in this study is characterized by co-planning, co-teaching, and co-assessing with two or more teachers coming from different subject areas. And, during the collaborative teaching process, they also exchange and discuss ideas, share leadership power and support with others.



Study Context, Participants, and the Course

This instructional approach “Co-Blended Learning” has not been presented in other research literature. Its main concept is to combine co-teaching with blended learning to guide students to learn with other peers through in-class (face-to-face) cooperative learning and across-class virtual collaboration during the student’s learning process. In the beginning, such an approach was designed just to try to solve the problem of bilingual teacher shortage. Some teachers good at bilingual instruction could be the “bridge teachers” to assist other teachers via this online synchronous approach to teaching bilingual courses. During the attempt and experimental process, the co-teaching way of Co-Blended Learning could bright real-time support to teachers to effectively teach bilingual courses. Another unexpected result is a cross-cultural online class-group learning environment was created. This environment could provide more dialogue practice opportunities and practical application experience, and allow students and teachers can exchange, collaborate, or learn with other peers in different places (countries) via this model without leaving home. It would help students obtain meaningful and valuable learning experiences in the bilingual learning process.

From 2022 to June 2023, there were three experimental course cases of Co-Blended Learning. The subjects in this study were all primary school

students. But students participating in each case were from different grades including: a) 3rd grade students from a Taiwan primary school in 2022, consisting of 3 classes with a total of 65 students. b) In 2023, 5th-grade students from a Taiwan primary school (2 classes) and 5th-grade students from a Philippine primary school (1 class), totaled 68 students. c) In 2023, students from two 4th-grade classes in Taiwan primary school and one 4th-grade class in the U.S., totaled 58 students.

In this study, all teaching materials of courses are thematic units, integrated, oriented task-based, and designed by teachers. The design purpose of the course is not only to instruct students to develop their bilingual ability but also to guide students from different classrooms could exchange and share through a thematic unit course within an online class-group environment. For bilingual education, such course content and learning approach create a practical bilingual learning context for students. It provides additional learning experiences where students can interact, collaborate, and engage in autonomous learning, thereby expanding opportunities for cross-cultural learning. All teachers participating in the online group designed the subject, content, and assessment of the course.

Instructional Procedure in this Study

Co-Blended Learning is characterized by two important factors. The first one is co-teaching, conducted by a teacher's team composed of different schools. There are two kinds of instruction(teacher) roles respectively "bridge teacher" and "partner teacher" in the teacher team. When the online class group is composed, each online class group has one bridge teacher and several partner teachers (like homeroom teachers) from the classroom. The bridge teacher is charged with online teaching, delivering online learning tasks, and guiding students to conduct cross-class presentations, compete in groups, or exchange their experiences within the online class-group environment. The partner teacher in each classroom is charged with leading their own class students to conduct face-to-face team discussions to help students find the solutions for learning tasks and provide some students guidance for individual problems. When students complete online learning tasks, the partner teachers would lead them to upload learning work. In addition, the partner teachers also can provide further more extended learning content according to the situ-

ation of their students learning during the process or at the end of the course. Via this approach, students can not only receive in-person guidance and support from teachers in their own classroom, but also they can obtain guidance from the online teacher.

The second important factor of Co-Blended Learning is blended learning, based on digital technology such as the Internet, online learning platform systems, and videoconferencing, students learn with their classmates and across-class peers via an online class-group environment. In this study, this online class group implicated can be composed from different schools which might be different locations places, or countries. In the operation of the online class group, materials of the courses are delivered via a digital platform or in-person instruction. The learning activities are based on task-based learning. During face-to-face sessions in the classroom, students could group discuss the material and group tasks. All students of this online class group have opportunities to across class-exchange their works, ideas, and opinions across with synchronous real-time online meeting sessions. digital platforms., or network collaboration.

The collaborative plan of the teacher team is as important as the course plan during the Co-Blended Learning procedure. In each attempt course case, teachers attended the co-plan meeting twice, once before the beginning of the course and the other after the course was completed. The purpose of the first co-plan meeting is to discuss the course plan, Identify the charge work content of the bridge teacher and the partner teacher respectively., and collaborate to develop teaching strategies. The second co-plan meeting focused on collecting the results of the course, students’ feedback, and teachers’ teaching reflections. Similarly, with the convenience and flexibility of the internet and video conferencing, teachers also can discuss and exchange with other teachers from different places without being limited by time and space.

In this study, we promote the use of technologies, including online learning platform systems, websites, information technology, and mobile devices, during the implementation of Co-Blended Learning. It will assist students in bilingual courses to interact and exchange ideas with peers from different classrooms. The use of digital materials and multimedia resources can also enrich the content of bilingual learning. The implementation sequence of Co-Blished learning can be divided into three instructional stages: “Understanding/Participation,” “Application/Transformation,” and “Sharing/Exchange.”

Each stage has corresponding emphasis and teaching strategies, detailed as follows:

- (1) Understanding/Engagement: The emphasis of this instructional stage is to guide students to get to know and interact with peers from other classes, establishing a preliminary concept of the course. At the start of the course, it could be successful in facilitating students to apply themselves to learning. The actual teaching strategies include the bridge teacher conducting ice-breaker games and guiding all students to engage in digital reading with an e-book. At the same time, the partner teacher assists in the classroom, helping the bridge teacher guide their own students to delve deeper into reading this e-book. Finally, the bridge teacher ensures that all students understand the content of the e-book through real-time assessment.
- (2) Application/Transformation: The emphasis of this instructional stage is to guide students to conduct in-depth discussions on course issues and collaboratively complete learning tasks within team cooperation. During the process of completing learning tasks, students obtain an opportunity to apply the skills they have learned in the course to develop higher-level integrated capabilities. The actual teaching strategies include the bridge teacher sending problem-oriented learning tasks to all students via an online learning platform system. Each partner teacher is the major instructor in the classroom. They not only encourage their students to participate in team discussions and collaboration but also assist them in addressing individual learning problems. At the end, each student has completed and uploaded their learning work.
- (3) Sharing/Exchange: The emphasis of this instructional stage is to encourage students to express bravely their ideas and opinions within the online class-group environment. Through such an exchange approach, each student can learn from the creativity and reflections of the other peers, thereby enhancing their learning efficiency. The actual teaching strategies include the bridge teacher leading all students to participate in interactive activities such as oral presentations or reports, and team competition games via the online learning platform systems. Each partner teacher simultaneously provides real-time assistance and guidance to students in the classroom. After the course concludes, these partner teachers can guide further learning content based on the learning needs of their own students.

Research Design and Instruments

The purpose of this study is to describe the actual insights regarding student satisfaction and learning outcomes when applying Co-Blended Learning in bilingual education. This research adapts both qualitative and quantitative methods. Quantitative data were collected from the student satisfaction questionnaires regarding Co-Blended Learning. Qualitative data were collected from teachers' feedback which was based on teacher-observed student learning outcomes/ learning performances. At the beginning of the course, students were informed about the purpose of the study and which types of data would be collected and analyzed. Consent was obtained from all students. Furthermore, the data for this study were collected in a recognized educational environment.

Research instruments

Co-teaching is an important and unique feature of Co-Blended Learning. Therefore, this study adapts the perspective of co-teaching to assess the degree of student satisfaction regarding Co-Blended Learning through a questionnaire survey after each experimental course concludes. The content of this questionnaire based on Anwar et al. (2021) was revised as appropriate and considering the characteristics of all participants being elementary school students, thereby reducing the number of items without compromising the survey's reliability and validity. The questionnaire consists of five items, using a Likert five-point scale. Overall, the reliability alpha is 0.886 as follows:

Table1 Reliability statistics of student satisfaction questionnaires regarding Co-Blended Learning

Questionnaire	N of items	Cronbach α	KMO	Sig	Cumulative explained variance
student satisfaction regarding Co-Blended Learning	5	.886	.872	.000	70.069 %

Table 1 shows the results of the reliability analysis show that the value of Cronbach's Alpha is 0.886 where this number is greater than the minimum score of 0.6. This means that this questionnaire used to measure student satisfaction questionnaires regarding Co-Blended Learning is valid and reliable.

Some qualitative data was collected to supplement the real description

of student satisfaction regarding Co-Blended Learning and students' learning outcomes after they received bilingual instruction via the Co-Blended Learning approach. The qualitative data come from four teachers' feedback who participated in the experimental course case in an unstructured interview. All four teachers in this study are female. One of them has over 15 years of teaching experience, one of them has 10 years of teaching experience while the other two have less than 5 years of teaching experience. Regarding their instruction roles in the online class group, three teachers are "partner teachers," while one teacher is a "bridge teacher." In addition, each teacher was given a number. And, identifiers for the participants are masked by the information obtained in such a way that, directly or indirectly, they cannot be easily determined. This study uses open-ended questions and natural conversations to focus on key points from their observations and thoughts. In this study, our key points have been limited to two questions:

- (1) How do the students feel regarding Co-Blended Learning?
- (2) What changes in students' bilingual learning outcomes/ learning performances have you observed after they received the bilingual instruction via the Co-Blended Learning approach?

Data analysis

This study used descriptive statistics to calculate means (or means) and percentages of items to show the degree of student satisfaction regarding Co-Blended Learning. The qualitative data used for this study was to collect teachers' feedback which was based on teacher-observed student satisfaction regarding Co-Blended Learning and students' learning outcomes/ learning performances. Through dialogue and language exchange with teachers, as described by Maccoby & Maccoby (1954), to obtain and understand their cognition and views. These results were then compiled to determine the answers to the aforementioned research questions. In the data description or analysis process, the principles as reminded by Silverman (1993) were followed in this study.

Results and Discussions

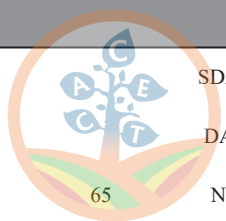
The degree of student satisfaction regarding Co-Blended Learning

This study adopts a questionnaire survey to assess the degree of student satisfaction regarding Co-Blended Learning. From 2022 to June 2023, there were three experimental course cases of Co-Blended Learning. After the course concludes, each student is invited to fill out a questionnaire to express their degree of satisfaction. Overall, the results of the survey are as follows Table 2.

Table 2 shows that students who participated in the experimental course case, regardless of whether they were from Taiwan, the Philippines, or the United States, expressed a high percentage of degree of satisfaction regarding Co-Blended Learning. Most students strongly agreed or agreed that the co-teaching of Co-Blended Learning was beneficial to their learning, such as these questionnaire items: one more teacher instruct could make the learning way easy to do, helping students to concentrate on listening to the content of the class, letting the course content becomes more interesting and easier to understand., and making students enjoy learning and dedicated to studying. These results of the survey are significant and indicate that Co-Blended Learning with co-teaching features could be practical and developable in the school.

Table2 Percentage distribution of the degree level of student satisfaction regarding Co-Blended Learning

Experimental Course Case	Participating Students	Statement	①	②	③	④	⑤
			The learning way the teachers taught us in this course is easy to do.	The teaching way teachers work together will help me to concentrate on listening to the content of the course	Teachers are collaborative to teach not only the content of the material but also teach us about other fields, in this course.	The teaching way teachers work together makes me feel that the course content becomes more interesting and easier to understand.	The teaching way teachers work together makes me enjoy learning and dedicated to studying.
a	65	SDA	0.0	0.0	0.0	0.0	0.0
		DA	1.5	1.5	0.0	4.6	6.2
		N	16.9	27.7	12.3	26.2	43.1
		A	30.8	33.8	38.5	26.2	29.2
		SA	50.8	36.9	49.2	43.1	21.5
b	68	SDA	0.0	0.0	0.0	0.0	0.0
		DA	0.0	1.5	1.5	1.5	1.5
		N	16.2	20.6	16.2	19.1	25.0
		A	44.1	42.6	41.2	32.4	25.0
		SA	39.7	35.3	41.2	47.1	48.5
c	58	SDA	0.0	5.9	0.0	5.9	0.0
		DA	0.0	0.0	0.0	0.0	5.9
		N	23.5	5.9	35.3	29.4	11.8
		A	17.6	41.2	11.8	29.4	29.4
		SA	58.5	47.1	52.9	35.3	52.9



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This study used an unstructured interview to collect teachers' feedback to gain a more concrete understanding of students' true reflections and perceptions about their satisfaction regarding Co-Blended Learning. From these teachers' feedback, we can roughly summarize some characteristics of student satisfaction regarding Co-Blended Learning, as follows:

I thought that students generally have a high acceptance of this approach. Some students have mentioned that having two teachers is great. If they don't understand the content taught by the bridge teacher, they can immediately receive guidance from me (partner teacher) in the classroom (J & Y, 2022).

Some students told me it is so special to be able to take bilingual classes with two teachers. They are often asking me when is next course time (L&C, 2022).

Several students responded that it was very interesting to be able to use the iPad to complete their learning tasks in bilingual classes and made them want to continue learning bilingual lessons (S&Y, 2023).

My students would usually discuss with me the content taught by the online teacher during break time. I could feel that students liked this learning way (H&Y, 2022).

Another significant characteristic summarized from the student satisfaction regarding Co-Blended Learning from these teachers' feedback is students feel they could have the opportunity to communicate with students and teachers from different classes, as follows:

My students responded that the learning way is very cool! Because they can take classes and discuss with students from different schools (or countries) without leaving home (W&M, 2023).

Students love sharing their ideas within the online class group and getting feedback from other students or teachers who are from other classrooms (S&Y, 2023).

Some students said that they usually don't have the opportunity to interact with foreign students, but now they can learn with foreign students via such a learning way within an online environment. They think this is a valuable opportunity (J & Y, 2022).

Some students thought that this form of online interaction or communication could help them interact better with others and gain a deeper understanding of the cultures of other countries (L&C, 2022).

Effective teacher-student interaction and student-to-student interaction are important affect factors to help students to generate deep understanding. Moore (1993) asserts that this management involves three key types of learning interaction: interaction with resources; with teachers; and with peers. The quality of each of these types of interaction is of concern in both face-to-face and online environments. In the current educational trend of blended learning, Hansen (1996) reminds us to focus on a new element of interaction – the interaction of both the teacher and the learner with an interface. Through Co-Blended Learning, students not only engage in traditional face-to-face interactions with peers in the classroom but also interact with other students from different places via an online environment. In addition, with the implementation of co-teaching within Co-Blended Learning, students can not only receive in-person guidance and support from their own teachers (partner teachers) in the classroom, but also, they can obtain online guidance from the bridge teacher. Such an approach combines the advantages of traditional face-to-face guides, online learning, and co-teaching, which could bring many benefits to student learning. Therefore, in this study, Co-Blended Learning has obtained a high degree level of satisfaction from most of the participating students.

The students' learning outcomes/ learning performances obtained through Co-Blended Learning

From teachers' feedback, some pieces of evidence of Taiwan students' bilingual learning outcome/ learning performances after they received bilingual instruction via the Co-Blended Learning approach could extract clues. These nuanced and authentic statements demonstrate the students' growth in learning outcomes in bilingual education, such as increased learning motivation in bilingual courses, improved higher level of class participation, progress in English communication ability, etc. as follows.

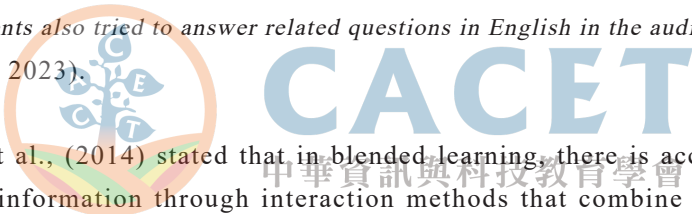
Some students said that when they communicate with foreign students, they should immediately apply the English words and sentences they have learned, which can help them improve their English skills. This course made them feel that communicating with foreign students is a very interesting thing and that learning bilingual courses is a very good thing (W&M, 2023).

Many students told me that this bilingual course and the teaching way are so cool. Students also respond that they can apply the English words or sentences they have learned to compete with other peers from different classrooms, which makes them feel confident!! (L&C, 2022).

Because the opportunities for students to communicate with other peers in English have increased. I obviously feel that the students have made more progress in their English report ability (J &Y, 2022).

Interacting with other students from different classes could make students feel interesting. Therefore, students become more involved in the course activities (S&Y, 2023).

I observed that when the students heard the answers of students from different classes and even different nationalities, you could really feel that some students also tried to answer related questions in English in the audience (W &M, 2023).



Yigit et al., (2014) stated that in blended learning, there is access and transfer of information through interaction methods that combine conventional face-to-face sessions with online or online learning (in networks). The research results (Danče, 2010) show that learning with technology in language learning through blended learning can develop students' informational and communicational abilities as a support of their learning. During the implementation process of Co-Blended Learning, the mix of face-to-face and online virtual interaction ways, combined with appropriate learning tasks, facilitates students to engage in immediate bilingual interactions and discussions with peers. When students apply the skills and knowledge learned from the courses to solve problems, it would be beneficial to allow them to improve their learning outcomes/learning performance. These changes in students' bilingual learning outcomes/ learning performances, as expressed in the feedback from teachers. The Co-Blended Learning in this study is an original model. From a facilitation perspective, regarding the effects of the Co-Blended Learning approach on student learning outcomes/learning performance still requires the accumulation of numerous implementation cases and statistics data results to further explore its effectiveness. Currently, the implementation results of three experimental course cases in this study have shown some valuable insights and clues. For generalization, future studies are needed to continually

Conclusion

This study contributes several meaningful findings to bilingual education in Taiwan regarding how to combine blended learning and co-teaching to better address the shortage of teachers, student satisfaction, and student learning outcomes. Furthermore, the Co-Blended Learning in this study could create a low-cost and extensive bilingual learning experience environment, that allows students to collaborate and interact with peers from different places without leaving the classroom or school. It will assist students in effectively and sustainably enhancing to improving their bilingual learning effect. The results of this research on Co-Blended Learning conclude that there is a high degree level of satisfaction regarding Co-Blended Learning from most of the participating students. Regarding the students' bilingual learning outcomes/ learning performances, the teachers' feedback based on their observations shows that the Taiwanese students who participated in 3 experimental course cases showed greater progress in class participation and English communication skills. This evidence may suggest that students feel interested and confident making them enjoy bilingual courses after receiving the Co-Blended Learning instruction approach.

The purpose of this study is to provide preliminary implementation results and research analysis for the Co-Blended Learning. Even though this study revealed several meaningful research findings, with limited data sources and research designs. To further generalize these findings, future studies are needed especially in terms of expanding the number of participants and a theoretical review of the experiment results in different settings.

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