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Master's Thesis of Education

A Developmental Study of
Instructional Strategies on
SNS Supported Collaborative
Learning for Vocabulary Learning

어휘학습을 위한 SNS 기반 협력학습

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Abstract

Vocabulary is the basis of constructing sentences and articles, an essential indicator to judge whether learners can master a language comprehensively, and a basic element for learners to achieve language output. Therefore, vocabulary learning plays an important role in language learning. Vocabulary learning aims at guiding learners' deep processing of vocabulary with their high participation. In this process, instructors' guidance helps learners to effectively learn vocabulary.

In the actual language learning, learners often ignore the vocabulary instruction, and the dull and passive learning method makes learners lose their interest in learning, and finally leads to the poor instructional effect. Therefore, in order to make learners actively participate in vocabulary learning and make vocabulary learning more efficient, it is necessary to explore instructional strategies that can stimulate learners' interest and provide learners with opportunities to use vocabulary.

Recently, people pay more and more attention to the application of collaborative learning in vocabulary learning. Compared with individual activities, collaborative learning can create more effective communication and interaction environment for vocabulary learning, enabling learners to create more vocabulary learning opportunities while using vocabulary continuously. In this process, learners' participation, interest, motivation and interaction are effectively affected. In addition, compared with individual learning, learners with group tend to produce correct language texts. In the other hand, SNS has the characteristics of interest, practice, context and interactivity, which can satisfy the motivation of vocabulary learning and stimulate learners' desire to participate actively, thus having a positive impact on vocabulary learning.

However, vocabulary learning researches which in the SNS supported collaborative learning mainly focused on the effectiveness and influencing factors, lacking of specific instructional strategy. Therefore, this study developed the

instructional strategies on SNS supported collaborative learning for vocabulary learning.

The purpose of this study is to develop the instructional strategies that promote vocabulary in the SNS supported collaborative learning. The issues of this study are : 1) What are the instructional strategies of SNS supported collaborative learning for vocabulary learning?; 2) Are the instructional strategies of SNS supported collaborative learning internally valid?; 3) What is the response of the learners and instructors towards the instructional strategies of SNS supported collaborative learning?

In order to solve these three problems, this study is based on the Type 2 (Model Research) in Richey & Klein (2014) ' s Design and Development Research Method. The validity of the initial instructional strategy obtained was evaluated and revised to export the final instructional strategies. First of all, the initial strategies and specific guidelines were derived through a discussion of the advance researches. After that, four experts major in educational technology conducted a validity test on the initial strategies. These instructional strategies were then applied to actual classroom teaching at a university with 16 students. After the course, the responses of the instructor and learners participating in the course were analyzed to find out the external validity test results. The responses of the learner mainly focused on the incomplete of the supervision mechanism, while the instructor raised the point that the evaluation criteria were not clear enough. Finally, the strengths, weaknesses, and improvement points of the instructional strategies proposed by learners and instructor were synthesized to derive the final instructional strategy, which were divided into three stages according to the course process, consisting of 8 general strategies and 21 specific guidelines.

The results show that the SNS supported collaborative learning outperformed the traditional learning in vocabulary gains. Furthermore, the learners' positive response indicated that this new kind of instruction was

interesting, helpful, and useful in increasing their motivation and engagement. This study suggests that SNS supported collaborative learning can be reasonably incorporate into the current curriculum to provide effective learning opportunities and to develop learners' vocabulary learning.

Key words: SNS supported learning, vocabulary learning, collaborative learning, SNS, SNS supported collaborative learning

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TABLE OF CONTENTS

Chapter 1. INTRODUCTION.....	1
1.1 Problem Statement and Purpose	1
1.2 Research Questions.....	5
1.3 Definition of Terms.....	6
Chapter 2. REVIEW OF THE LITERATURE	7
2.1 Vocabulary Learning.....	7
2.1.1 Vocabulary Learning and Teaching.....	7
2.1.2 Vocabulary Learning in a Collaborative Learning Environment	11
2.1.3 SNS supported vocabulary learning.....	14
2.2 SNS supported Collaborative Learning	16
Chapter 3. METHODOLOGY.....	18
3.1 Participants	18
3.2 Research Procedure	19
3.3 Research Tool	21
3.4 Data Collection and Analysis	24
3.4.1 Literature Review.....	24
3.4.2 Internal Validation.....	25
3.4.3 External Validation.....	28
Chapter 4. RESULTS.....	36
4.1 The Initial Instructional Strategies	36

4.2 Internal Valid Result	41
4.2.1 The First Expert Evaluation	41
4.2.2 The Second Expert Evaluation.....	50
4.3 Response of the Learners and Instructors.....	57
4.3.1 Learners' Response	57
4.3.2 Instructor' Response.....	63
4.4 The Final Instructional Strategies	65
Chapter 5. DISCUSSION AND CONCLUSION	73
5.1 Discussion.....	73
5.1.1 The Effect of the Instructional Strategies	73
5.1.2 Suggestion.....	75
5.2 Conclusion.....	76
5.2.1 Summary and Conclusion.....	76
5.2.2 Implication	78
REFERENCES.....	79
APPENDIXES.....	91
국문 초록.....	128

LIST OF TABLES

Table 2. 1 Explicit Methods	9
Table 2. 2 The Strategies for Reviewing and Using Vocabulary.....	10
Table 3. 1 Research Procedure	20
Table 3. 2The Main Functions Applied in the Course Implementation	23
Table 3. 3 Expert Validation Questionnaires for the Strategies.....	26
Table 3. 4 Expert Profile	27
Table 3. 5 The Design of Instructional Activities for Lessons 1	28
Table 3. 6 The Design of Instructional Activities for Lessons 2	34
Table 3. 7 Learner Profile.....	35
Table 4. 1 The Initial Instructional Strategies for Vocabulary Learning on SNS Supported Collaborative Learning	37
Table 4. 2 The First Overall Expert Evaluation Result	41
Table 4. 3 The First Expert Evaluation Result for Specific Guideline.....	43
Table 4. 4 The Revising Suggestions for Initial Instructional Strategies by Experts	

.....	47
Table 4. 5 The Second Overall Expert Evaluation Result.....	50
Table 4. 6 The Second Expert Evaluation Result for General Instructional Strategies and Specific Guidelines.....	51
Table 4. 7 The Revising Suggestions for the Second Instructional Strategies by Experts.....	55
Table 4. 8 The Result of the Learners Response	58
Table 4. 9 Learners' Response to the Strengths of the Instructional Strategies	59
Table 4. 10 Learners' Response to the Weakness of the Instructional Strategies	62
Table 4. 11 The Comprehensive Revision Comments for the Instructional Strategies	64
Table 4. 12 The Final Instructional Strategies for Vocabulary Learning based on SNS Supported Collaborative Learning.....	66

LIST OF FIGURES

Figure 3. 1 The Overall Interface of the WeChat	23
Figure 3. 2 The Activities before Class for Lesson 1	31
Figure 3. 3 The Activities during and after Class for Lesson 1	32
Figure 3. 4 The Activities after Class for Lesson 2	33

Chapter 1. INTRODUCTION

1.1 Problem Statement and Purpose

As Wilkins (1972) argues, “Without grammar very little can be conveyed, and without vocabulary nothing can be conveyed.” (p.111) The critical importance of vocabulary in all languages is undisputed as vocabulary not only establishes cognitive systems of knowledge, but also facilitates the communication and comprehensive interaction (Coady & Huckin,1997). There is plenty of empirical research to show that the more vocabulary language learners possess, the higher they are able to score in language tests (Laufer, 1992; Laufer and Goldstein 2004; Alderson 2005; Albrechtsen, Haastrup, and Henriksen 2008). It is without a doubt that vocabulary is essential for learners' overall language acquisition and plays a crucial role in the learning of other language skills(Nation, 2001).

According to the “Theories of Input and Output ”(Krashen, 1985; Swain, 1995), vocabulary learning consists of two processes: input and output. Different emphasis is placed on input and output processes. The former entails presenting the meaning, form and structure of vocabulary; the latter necessitates active usage of vocabulary, allowing vocabulary to be internalized in the process. In general, the output part of vocabulary learning is divided into receptive output and productive output. Receptive output mainly takes place in the vocabulary review and consolidation phase. It can be carried out through listening and reading activities. On the other hand, productive output takes place primarily participation in language activities that require active usage of vocabulary knowledge, such as speaking and writing.

Hulstijn & Laufer(2001) mentioned that vocabulary learning and instruction should be designed with the aim of stimulating deep processing of vocabulary for learners through a higher degree of involvement load. In other words, vocabulary learning should not merely be a superficial memory process(Craik & Lockhart, 1972). As studies have suggested, simply presenting material via an exercise or

attempting to get learners to notice items via textual enhancement may not be as effective for vocabulary retention as actually actively using the words (Folse, 2006; Hulstijn & Laufer, 2001) which may in turn lead to deeper processing. Thornbury(2011) also points out that vocabulary should be understood in theory be practiced in appropriate contexts, and to be used in real life. Therefore, a vocabulary learning course which can provide access to authentic language that make it possible to learn the practical use of vocabulary is considered necessary(Wen, 2008). That is to say, we should pay attention to the output process of vocabulary learning should be paid attention.

Nevertheless, in the past, vocabulary was regarded as being secondary in language teaching area, thereby often to the point of being neglected(Lee, 1996; Sinclair & Renouf, 1988). As DeCarrico(2011) indicated, the low status of vocabulary studies is largely due to teaching approaches that placed emphasis on grammar and phonological structure. However, recently, more attention is to being paid towards vocabulary and studies on vocabulary have increased exponentially. Out of the these studies, most focus on exploring how to facilitate and maximize the efficiency of the input process but very few examine the output process of vocabulary learning.

As such, it would be of great value to design a vocabulary learning course that can create practical real-life situations in which learners are highly involved, and that can provide opportunities for learners to communicate with each other to improve their ability to use vocabulary.

As of late, some research has looked at interactions that occur in language learning, considering it to provide an opportunity for learners to collaborate in the solution of their language-related problems, building upon each other's abilities, and co-constructing new language knowledge (Donato, 1994; Ohta, 2001; Swain, 2000). Additionally, there are other research findings that confirm that interaction, either between learners (e.g. Adams, 2007; Newton, 1993) or between a learner and a teacher (e.g. De la Fuente, 2002; Ellis & He, 1999; Ellis, Tanaka & Yamazaki, 1994; Gass & Alvarez Torres, 2005) facilitates vocabulary learning. Kim(2008) reported that compared with the individual learning activities,

collaborative learning activities may create more language learning opportunities, particularly more vocabulary learning opportunities by research. Indeed, collaborative learning provides an effective communication context for vocabulary learning(Zhang, 2009).

Collaborative learning which conducts continuous meaning creation by placing emphasis on providing the opportunity to form a learning community enabling the learner-learner interaction or learner-instructor interaction and conduct continuous meaning creation(Gilbert & Driscoll, 2002) is considered feasible.

Consequently, collaborative learning has been widely applied in education since the 1980s due to associated positive outcomes such as increasing motivation as well as improving academic performance and long-term retention (Brown, 2008; Dillenbourg, Baker, Blaye, & O' Malley, 1996). Collaborative learning means that knowledge is not something that is 'delivered' to students, but rather something that emerges from active dialogue among those who seek to understand and apply concepts and techniques. This is a learning process in which learners are highly involved.

On the other hand, since the introduction of the Web 2.0 Concept in 2004, learning paradigm is changing thanks to the advent and development of various new technologies. Technology, was found to increase learning motivation and interest, developing positive attitudes toward learning, resulting in higher-order thinking and better recall, as well as improvement of language skills (Stepp&Greany, 2002). A number of studies advocating technology in support of collaborative learning revealed that the integration of computers into classrooms helps to increase collaborative behavior and social interaction among learners (Crook, 1994).

Most recently, SNS(Social Network Service), a new technology that is a product of Web 2.0 and is represented by Facebook, KakaoTalk, Twitter, and blogging sites, has been gradually used for effective collaborative learning through active interaction among learners(Joo & Jung, 2016). Kang et al (2011) proposed that, SNS, with its drawing on its advantages of sociality, practicality, affordability, interactivity, and popularity (Boyd & Ellison, 2008; Godwin &

Jones, 2006; Lu, 2008; Thornton & Houser, 2005; Ferdig et al., 2007) which enables information sharing among learners, and as such the possibility of a collaborative learning environment is raised as it provides a collaborative environment for solving problems together through collective intelligence. In particular, collaborative learning is aimed at achieving common goals through the interaction between learners, so it is important to promote learners' interaction and thus introduction of SNS into these methods can increase learning effectiveness (Lim, 2011).

Studies on using SNS supported collaborative learning (“SSCL”) in universities have been introduced to be effective in academic achievement and (Joo & Jung, 2016). Yoo(2014) studied the effects of SSCL in English grammar learning, and the results proved that better understanding of grammar could be credited to the positive effects of cultivating interest towards grammar. At the same time, this study also proposed the possibility of using SSCL in vocabulary learning. Another researcher compared the effects of SSCL in vocabulary learning with traditional classroom learning, and the results proved the effectiveness of SSCL in vocabulary learning. However, present research on SSCL is still insufficient and out of these studies, most focus on the outcomes of using SSCL. There is almost no research on how to design SSCL strategies to promote vocabulary learning. Therefore, this study will seek to design an SSCL strategy for vocabulary learning.

This study aims to provide and design strategies that guides instructors to create an SNS supported collaborative learning environment for facilitating vocabulary learning. It is hoped that it can help learners improve their vocabulary skills through various social group learning activities using a collaborative learning environment created by SNS.

1.2 Research Questions

In this study, we intend to conduct a study on the design strategies for instructors to build a SNS supported collaborative learning to promote vocabulary learning. To achieve this research objective, the research questions are as follows:

- 1) What are the instructional strategies of SNS supported collaborative learning for vocabulary learning?
- 2) Are the instructional strategies of SNS supported collaborative learning internally valid?
- 3) What is the response of the learners and instructors towards the instructional strategies of SNS supported collaborative learning?

1.3 Definition of Terms

Vocabulary learning

Traditional linguistics states that language consists of three elements: phonology, vocabulary and grammar. Among them, vocabulary is considered the 'building material' that is indispensable for all parts of language learning. Vocabulary learning is the process of vocabulary acquisition which is divided into five specific processes: encountering new words, understanding the word's form, understanding the word's meaning, consolidating the word's form and meaning in memory, and using the word (Brown & Payne, 1994). In this study, vocabulary learning emphasizes the process of learning to use vocabulary.

SNS supported collaborative learning(SSCL)

SNS is a product of the Web 2.0 era that declares openness, participation, sharing, and collaboration, and can be used as an auxiliary tool in learning to support social activities in which learners are connected in a web environment (Boyd and Ellison, 2007). Collaborative learning can be defined as a situation in which more than one learner attempts to learn or learn something together from a broad perspective (Dillenbourg, 1999). With reference to the idea of Web-based collaborative learning, which is a collaborative process in which learners connected to each other through a Web-based learning environment discuss and exchange ideas to successfully solve common learning problems (Koriji, Ogawa, & Watanabe, 2001), this study will define SNS supported collaborative learning as a learning environment where learners with common goals form a social learning group to achieve knowledge construction through interactions within and between groups.

Chapter 2. REVIEW OF THE LITERATURE

2.1 Vocabulary Learning

2.1.1 Vocabulary Learning and Teaching

Vygotsky (1962) proposed that vocabulary learning is a fundamental component of foreign language acquisition. As the one of the three elements of language learning, vocabulary is the main bearer of the meaning of language expression, and it is also an important indicator to measure the progress of learning.

According to the Theories of Input and Output, vocabulary learning is consisting of two processes: input and output. Input activities include: identification, screening, matching, classification, and grading and sorting. Output tasks include: completing sentences or texts, sentence-making, or writing. The American linguist Krashen put forth the “Input Hypothesis” in 1985. He pointed out that ideal input usually has four characteristics: first, comprehensive, understanding the language of input is a necessary condition for language acquisition; second, input materials should be as interesting and relevant as possible; third, non-grammatical arrangements (not grammatically sequenced); fourth, language acquisition must have enough understandable input (i+1). The theory holds that input is critical, and language material should be slightly more difficult than the language learner's existing language knowledge. Language input should be moderately difficult, and should be large and frequent. Swain (1995), who proposed the famous “Output Hypothesis”, postulated mentioned that the output process must be internalized by thinking, control, and linguistic knowledge, and the output can be deeply layered to facilitate language acquisition.

From the perspective of the vocabulary learning process, Bai (2008) identified the eight aspects of vocabulary learning: (1) Pronouncing it in a recognizable way; (2) Spelling it correctly; (3) Relating it to appropriate

grammatical form; (4) Recognizing it in written and spoken forms; (5) Recalling it at once; (6) Using it in correct collocation; (7) Using it at appropriate level of formality; (8) Being aware of its connotation.

In addition, from a psychological point of view, Craik & Lockhart (1972) presented that the vocabulary learning includes the process of memory, and the process of memory can be divided into: short-term storage, working memory and long-term memory. In the vocabulary learning, using vocabulary is thought to be the best way of vocabulary, entering into long-term memory. Only the learner's transition from superficial vocabulary activities to deep-level processing activities that require the active use of vocabulary can make the memory and acquisition of vocabulary memories and acquisitions more long-lasting and effective.

In the vocabulary learning, learners of different language levels have different requirements. Low-level language learners need to expand vocabulary size to improve language knowledge and skills. High-level learners should further improve their ability to use vocabulary while developing other basic skills. Only in this way can language learners' language synthesis ability be improved (Lv, 2004). The university stage is the advanced stage of English learning. Therefore, English vocabulary instruction for college students should focus on cultivating the ability to use vocabulary use skills. This conclusion is consistent with Lewis (1993) who posited that one of the most important goals of foreign language instruction is to cultivate learners' ability to understand and use vocabulary.

Before exploring the instructional strategies for vocabulary learning, we first need to understand the basic components of vocabulary instruction. As shown in the following Figure 2.1, vocabulary instruction is composed of three elements: form, structure, and use.

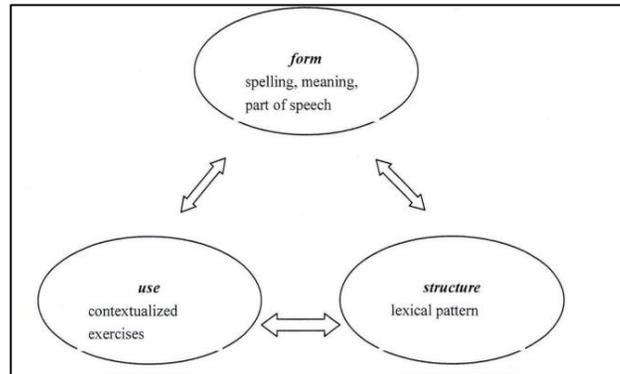


Figure 2. 1 The Basic Composition of Vocabulary Instruction(Ding, 2017)

In the input stage of instruction, the form and structure of vocabulary are taught to the learners. Use is the output process. Learning and acquisition should be combined to make the learning vocabulary classroom for learning vocabulary lively. This requires instructors to pay attention to research on instruction of vocabulary use.

The central question of research into vocabulary learning is whether it is more effective to focus on explicit or implicit learning (Carter, 2001; DeCarrico, 2000; Nation, 2001). Implicit learning means that a learner acquires new words while the main focus is on the information to which they are exposed to. Explicit learning involves the direct teaching and learning of vocabulary (Kang, 2003). Nation (2001) used explicit methods to supplement the lack of implicit methods in vocabulary learning, and this can be an effective alternative as Table 2.1 shows below.

Table 2. 1 Explicit Methods

Vocabulary knowledge	Activity
Form	Repeating meeting as in repeat reading
Meaning	Depth of processing through the use of images, elaboration, deliberate inference

Use	Grammar collection	Repetition
	Constraints on use	Explicit guidance and feedback

Schmitt and McCarthy (2002) proposed four strategies for reviewing and using vocabulary to instructors, as shown in Table 2.2. Among them, the metacognitive strategy is more biased towards the learning strategy. These four strategies, it provides some inspiration for instructional strategy design to facilitate vocabulary learning.

Table 2. 2 The Strategies for Reviewing and Using Vocabulary(Schmitt and McCarthy, 2002)

Strategy	Explanation
Social Strategies	Improve the ability to use vocabulary in social communication
Memory Strategies	Incorporate new knowledge to old knowledge to practice and use vocabulary
Cognitive Strategies	Promote learners' ability to use and transform target languages
Metacognitive Strategies	Emphasize the generalization of the learning process and the decision to plan, monitor and reflect

In addition, many experts and scholars have also studied instructional strategies for vocabulary learning. At present, the research focus on vocabulary learning at home and abroad has always been through indirect learning with

incidental vocabulary. Among them, the vocabulary learning method through context is most widely studied by linguists. Linguist James Coady (1997) and others believe that high-level learners can gain vocabulary knowledge through extensive reading. Decarrio (2001) suggests that learners be placed in an ocean of books so that they can acquire vocabulary through a voluminous amount of reading. He believes that learning vocabulary through extensive reading is better than systematic vocabulary guidance employing out-of-context exercises. Furthermore, Nation (1988) found that in order to successfully remember a new word naturally, the student must have at least seen one word in a row for 5-16 times. It can be seen that if one wants to learn words naturally, one must have a learning environment that provides a wide range of reading opportunities. Laufer & Hulstijn's "investment" theory holds that more complex tasks require more inputs. Therefore, in the process of vocabulary learning after class, in order to increase the input of learners, learners are required to master and acquire deeper knowledge of these new words to grasp their full meaning. In this way, vocabulary learning goes from a process of using cognitive or receptive ability to exercising application-output ability. As a result, the learner not only understands the semantics of the word, but is also able to use the word accurately and flexibly.

There are many instructional strategies for vocabulary learning. Moreover, with the continuous development of technology and education, new instructional methods and the latest technologies are increasingly being used in the study of teaching strategies to promote vocabulary learning.

2.1.2 Vocabulary Learning in a Collaborative Learning

Environment

Broadly speaking, collaborative learning refers to an instruction method in which at least two learners at various performance levels learn something together in small groups with a common goal (Laal, Marjan, 2013). In a collaborative learning setting, learners have the opportunity to converse with

peers, articulate and defend their own ideas, exchange diverse beliefs, question other conceptual frameworks, and are actively engaged (Srinivas, H., 2011). In other words, collaborative learning provides an opportunity to form a learning community as compared to the existing face-to-face learning environment, enabling continuous meaning creation through learner-learner and learner-instructor interaction (Gilbert & Driscoll, 2002).

Vocabulary learning is generally considered to be an individual learning process. However, some research evidence has showed that pairs tend to produce linguistically more accurate texts than individual learners (Storch, 1999, 2005; Storch & Wigglesworth, 2007; Wigglesworth & Storch, 2009). Evidence obtained has also demonstrated that collaborative activities may create more language learning opportunities, particularly more vocabulary learning opportunities, as compared to individual activities. Kim (2008) conducted a study that compared the effect of pair and individual work on the learning of 15 pre-selected vocabulary items. The results revealed that learners working in pairs performed significantly better on both an immediate and a delayed vocabulary post-test. In short, this proves that there are more benefits from collaborative tasks as opposed to individual ones, and that vocabulary learning through collaborative learning characterized by an interactive, social task-driven and learner-oriented focus is desirable.

In fact, ever since the 1980s, there has been an increasing amount of research studying the effect of interaction in second language learning and endorsing the use of collaborative activities in the classroom. Most of this research has been conducted beginning with Long (1983, 1996), who first put forward the Interactionist theories, which postulate that learning takes place through the interaction which occurs between teacher and learners, and between peers. Furthermore, it analyzed conversational interaction, focusing on negotiation for meaning, modified output as well as negative and positive feedback. It was argued that learning is optimized when learners interact with each other while they participate in the cognitive processes of searching clarification, confirming meaning and making sure they understand.

Another key perspective comes from sociocultural theory that has its origins in the work of Vygotsky (1978) and central to it is the notion that learning a second language is very much a social activity, mediated by language. According to Vygotsky (1978) learning takes place when there is an ‘expert’ knower who assists learners using language and dialogue. It is proposed that learners pass through the Zone of Proximal Development (ZPD), defined as, ‘the collaborative construction of opportunities [...] for individuals to develop their mental abilities’ (Lantolf, 2000). ZPD in relation to vocabulary instruction is the degree to which learners can develop their mental abilities by working together on a common vocabulary learning task. In this process, the collaborative construction of language is essential. In other words, language learning occurs when ‘individuals engage with a common task in the pursuit of a common goal’ (McCarthy et al. 2008).

Summarizing the propositions of the aforementioned theories, it can be concluded that providing a collaborative environment for language learners to encourage individuals to interact with others can greatly optimize the learning effect. This affords theoretical support for vocabulary learning in a collaborative learning environment.

Moreover, the findings of the study conducted by Swain(2001a) revealed that collaborative learning enables collaborative dialogue between learners by requiring them to complete a common subject through group activities, during which learners are made to communicate with each other. The rationale is that, these activities encourage learners to think about language patterns while focusing on meaning and form (Swain, 2000). In this process, learners not only use more languages, but also increase mutual responsibility to help each other, and ultimately improve the efficiency of learning (Cho, 2011). Then, in this process, as part of the vocabulary that is less than enough in the communication dialogue, it can be fully utilized. This is a process of vocabulary learning that is repeatedly practiced and constantly created.

In conclusion, we are able to deduce that it makes sense to conduct vocabulary learning in a collaborative environment. What is of greatest

significance is that this environment creates a situation necessitating communication which allows learners to continuously use vocabulary, increases their motivation to learn and elicits interest through interaction with group members and other groups (Ana Fernndez Dobao, 2014; Jin, 2018; Tang, 2012).

2.1.3 SNS supported vocabulary learning

With the advent of the fourth industrial revolution era, science and technology have developed exponentially. One of the products of this phenomenon has been the ‘mobile revolution’ - the groundbreaking development and large-scale proliferation of mobile technology. The mobile revolution has radically transformed the way people communicate with each other. The changes in communication and interaction caused by mobile technology have not only affected our daily lives, but have also started to make their presence felt in the field of education as evidenced by the increasing amount of research utilizing mobile technology for education in recent years (Ally, 2009; Kukulska-Hulme & Traxler, 2005).

The use of mobile devices for education provides new learning opportunities and experiences for learners and educators, and has the flexibility of not adhering to traditional frameworks of learning, helping to increase student motivation and promote autonomous learning (Kim, Rueckert, Kim, & Seo, 2013; Kukulska-Hulme, 2009).

It is able to draw on out of textbook-centered texts and make use of the rich variety of educational materials available on the Internet, increasing access to learning materials (Dalmi & Albion, 2014).

The inherent advantages of using mobile devices to learn are mobility, portability, accessibility, immediacy and flexibility (Dalmi & Albion, 2014; Song, 2008; Zhang, Song, & Burston, 2011). In other words, mobile devices can be easily carried around and used at any time as a learning tool by students, removing traditional barriers to learning such as time and place, and allowing students to arrange their own study time outside the classroom. Moreover, instant

communication and interaction between students and between students and teachers become possible.

As Science and Technology continues to develop unabated in the 21st Century, people's interest has shifted from mobile learning to smart learning. In the new model of smart learning, SNS has also attracted a lot of attention in the field of education (Boyd & Ellison, 2008).

Godwin-Jones (2006) was the first to recognize the possibility of using SNS in language learning. He believed that SNS had great potential as a tool for foreign language learning by exposing learners to live languages. Researchers who have been supportive of using SNS in language learning have also undertaken various research on the subject (Baralt, 2011; Blattner & Fiori, 2009; Brick, 2011; Clark & Gruba, 2010; Harrison & Thomas, 2009). According to Warschauer (1997), the reason why language learning through SNS is effective for learners is because by expressing the purpose of language use, it allows them to pay attention to certain linguistic points, participate in exchange activities, speak or write their opinions, increase cultural sensitivity, and develop effective learning strategies. In addition, in the network environment of SNS, learners of different levels can not only get equal opportunities to practice language (Zhang & Mu, 2003), but also when it comes to vocabulary and sentence structure, learners can use more regular and complex sentences in the process of communication (Warschauer, 1996). This is consistent with Finocchiaro & Brumfit(1983)'s view that the most importance aspect of developing language skills is language use.

SNS has also enjoyed significant results when used for vocabulary learning during the language learning process (Lu, 2008; Zhang, 2011; Kennedy & Levy, 2008; Lee, 2018; Chen et a., 2008). Hasegawa et al. (2015) stated that SNS has a positive impact on learning motivation in vocabulary learning research through e-learning. Wu (2018) demonstrated that SNS has a positive impact on learning attitudes and interests in vocabulary learning. Chen & Li (2010) found that the use of SNS contributes to meaningful vocabulary learning when the learning process is integrated with social, cultural and life contexts.

Although the body of research on language learning supported by SNS continues to grow, there are few studies from the perspective of vocabulary learning. Therefore, further research is deemed to be necessary.

2.2 SNS supported Collaborative Learning

As an alternative to traditional instructor-led classes, with the advent of social constructivism theories that emphasized interaction and information sharing among learners, many researchers have begun to pay more attention to the collaborative learning.

According to Hesse and colleagues (2015), collaboration is an activity that works together towards a common goal, communication that means the exchange of knowledge or opinions, cooperation that means the distribution of roles, and active and insightful participation. Collaboration is a concept broader than coordination, which simply means an activity that is achieved by sharing roles among members. In addition, while cooperative learning focuses on achieving specific goals or producing final results under the lead of instructors, collaborative learning focuses on the process of carrying out joint work and is based on the members' acceptance and consensus of responsibility for the group activities (Panitz, 1999). In collaborative learning, the active interaction of members is emphasized, and it is necessary for all members to take joint cognitive responsibility for the learning process (Skadamalia, 2002).

Bandura (1997), who advocates social learning theory, believes that learners gain more knowledge by observing the actions of others, and Vygotsky (1978) believes that by interacting with other more knowledgeable learners, learners can maximize their own potential to develop. On the basis of this theory, collaborative learning is a learner-centered activity that facilitates interaction between classmates in pairs or in groups where learners can develop questions, discuss solutions, complete projects, and recall their own ideas and experiences (Laurillard, 2009; Stahl, Koschmann, & Suthers, 2006). Collaborative learning

emphasizes active interactions and the activeness of members, requiring all members to have a shared cognitive responsibility for the learning process (Scardamalia, 2002). In this process, it can contribute to develop learners' critical and reflective thinking skills (Hsu & Ching, 2013).

The concept of collaborative learning may sometimes be erroneously conflated with the concept of cooperative learning. The former is a process of solving problems together through dialogue among learners, while the latter is a process in which each learner only has to undertake his own tasks and then internalize the results (Henri & Rigault, 1996).

Therefore, collaborative learning emphasizes the interaction between learners and the participation of group members as opposed to collaborative learning (Roschelle & Teasley, 1995; Schrage, 1990).

Recently, there have been a growing number of examples in which SNS has been applied to education, and it is worth noting that the use of SNS in collaborative learning actively implements social learning theory (Lim, 2011). SNS, where learners can share information freely, provides a collaborative environment where problems are solved by collective intelligence. In particular, with the development of information technology, the emergence of smart phones has gradually transformed mobile learning into smart learning. The use of smartphones has the advantages of autonomy, partiality, accessibility, immediacy, and interactivity (Chen et al, 2002), and an increasing amount of attention is being paid to the educational applications of SNS using smartphones with such characteristics. In particular, using SNS that enables real-time communication for collaborative learning, facilitates better learner-learner interaction and learner-instructor interaction, allowing people to more efficiently and effectively utilize the collaborative learning environment (Joo, 2015). SNS supported collaborative learning can promote interaction between learners participating in learning drawing on the social advantages of SNS (Wodzicki, Schwammlein, Moskaliuk, 2012).

After a thorough examination of all the prior research, it can be concluded that research on SNS supported collaborative learning mainly focuses on the

outcomes of using SNS in language learning, and there is little research specifically focusing on the area of vocabulary learning, which makes this research all the more necessary.

Chapter 3. METHODOLOGY

This study is aimed constructing instructional strategies for instructors to design an effective course based on the SNS supported collaborative learning environment to facilitate vocabulary learning. For this purpose, this study employed the “Model Research (Type II)” of the Design and Development Research (Richey & Klein, 2014). Richey and Klein (2014) stated that the ultimate object of the Design and Development Research is the production of new knowledge, often in the form of a new (or an enhanced) design and development model. The model research consists of three processes: model development, model validation and model use. This study derived the instructional strategies of the vocabulary learning class based on SNS supported collaborative learning, and then verified the internal and external validity of the instructional strategies. Therefore, this study utilized model development combined with model validation. Model validation is a process that demonstrates the validity of a model's use in the workplace.

3.1 Participants

In this study, four experts in the field of educational technology participated in the process of expert evaluation. Furthermore, in order to receive feedback from both instructors and learners, a professor majored in English education and one class of 16 students from Z university participated in the process of course implement. Specifically, first, for internal validation of the instructional strategies,

four experts in the field of educational technology were invited. These experts should hold relevant master or doctoral degrees, possess more than 10 years of experience in related fields, and/or have experience conducting relevant research. A professor and 16 students then participated in the evaluation of the responses of professors and learners. There are two reasons for choosing college students as research subjects of this study. The first reason is that a high proportion of college students possess and regularly use smart phones. Studies have revealed that the largest demographic of mobile device users are between the ages of 18 and 29 years old (Crompton, Helen & Burke, Diane, 2018). Second, the problem of vocabulary learning of college students is more severe at the college level than at the junior high level.

According to the previous research, the criteria for selecting experts was determined to be scholars who had published relevant literature as their master's or doctoral theses in related fields (Davies, 1992), and only those with more than 10 years of experience in related fields, as calculated by experts (Ericsson & Charness, 1994). To get validation, 3 to 10 experts are required for validation (Rubio et al., 2003). Therefore, in this study, 4 experts specializing in educational technology were selected.

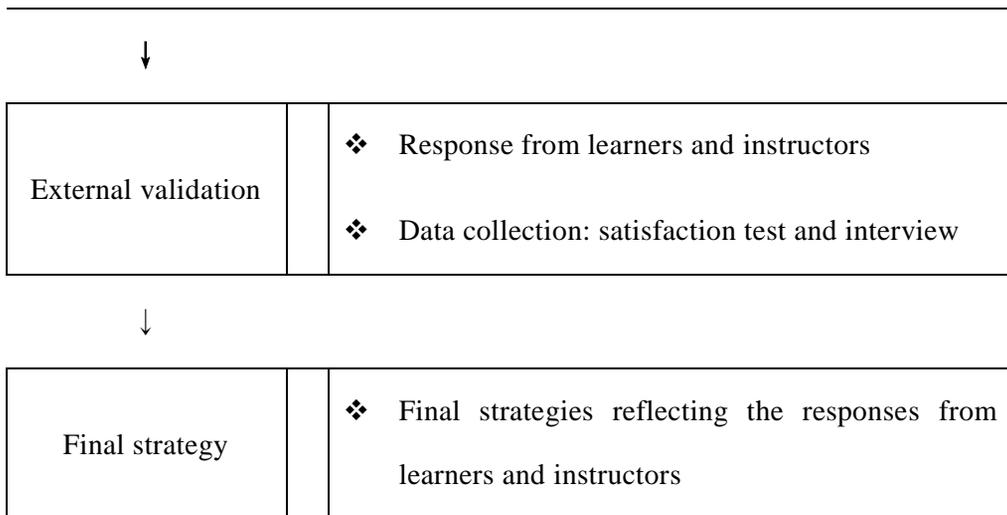
3.2 Research Procedure

In order to export the strategies for promoting vocabulary learning in SNS supported collaborative learning, and to verify the internal and external validation of the strategy, the research procedure was according to the following procedure stipulated in Table 3.1. First, through a review of the prior literature, necessities and research problems were identified, and subsequently prior researches related to “vocabulary learning” and “SNS supported collaborative learning” were searched. At this juncture, questionnaires were developed and interviews were

conducted to investigate the responses of professors and learners to the instructional strategies. After the initial strategy was introduced, through the expert evaluation, the internal validation of the instructional strategies were carried out, the results of the evaluation were reflected, and the strategies were revised. Following this, with the help of the professor, two courses applying the revised strategies was implemented. Subsequently, feedback from the instructor and learners on the efficacy of the class using the revised strategies were collated. Finally, through a quantitative and qualitative analysis of the questionnaires and interviews, the effectiveness of the revised the strategies were gauged, and on this basis, the final strategies were devised.

Table 3. 1 Research Procedure

Research procedures	Content
Initial strategy	<ul style="list-style-type: none"> ❖ The necessity and purpose of the research ❖ Statement of problem ❖ Literature review → initial strategy
↓	
Internal validation (2 times)	<ul style="list-style-type: none"> ❖ Object: 4 experts specializing in educational technology ❖ Data collection: validation checklist and interview
↓	
Implementation	<ul style="list-style-type: none"> ❖ Implement the strategy in Z university



3.3 Research Tool

This study will use the WeChat as an SNS tool, with the interface shown in the Figure 3.1 below. WeChat is currently by far the most widely used SNS software in China, boasting up to 1 billion users. As such, WeChat is the software with which the majority of Chinese college students are most familiar. The learners' familiarity with the application's function ensures equal accessibility and also means they do not require substantial time to familiarize themselves with its operations. Therefore, it would be highly practical and convenient for language learners to us. Furthermore, WeChat possess several useful features to assist with learning :

- 1) Messages are sent and received quickly. Users are not only able to send text messages, but also send audio voice messages.
- 2) The speed of information dissemination is fast and has far-reaching impacts. At present, most browsers, together with the majority of pictures, music, and video apps, support WeChat sharing. Users can easily share their favorite information to WeChat friends instantly, and similarly users' friends can also forward information to them at any

time. This kind of communication increases the dissemination of information and a faster, multi-faceted platform allows users to receive more useful information.

3)The cost of using WeChat is relatively low. First of all, WeChat downloading and registering for WeChat is free. Secondly, according to statistics, in the absence of Wi-Fi and 4G traffic, 1M traffic can publish more than 1,000 text messages and more than 15 minutes of voice messages, and you can download and watch videos for up to 1 minute. In other words, users have access to numerous. WeChat functions while experiencing only a small amount of traffic.

4)It has compressive functions. Since its launch, WeChat has continuously upgraded and improved its functions, it has also added a sharing platform, such as a circle of friends, public subscription numbers, an encyclopedia, as well as a question and answer forum.

5) It facilitates greater interaction among users. Through the chatting room function, users can communicate with the group members through text, voice, pictures, audio and video, etc., regardless of time and space.

WeChat covers various functions. In this study, “Chatting Room”, “Search”, “Note”, “Moment” these four functions were mainly used. The Table 3.2 explained the main functions of WeChat applied in this study when the courses implemented.



Figure 3. 1 The Overall Interface of the WeChat

Table 3. 2 The Main Functions Applied in the Course Implementation

	Description	Example
<p>Chatting Room</p>	<ul style="list-style-type: none"> ● Anytime, anywhere chat between individuals and groups ● Share files, images and videos ● Free voice call and video call 	

<p>Search</p>	<ul style="list-style-type: none"> ● Link external information 	
<p>Note</p>	<ul style="list-style-type: none"> ● Insert through various media such as text, voice, photo, video 	
<p>Moment</p>	<ul style="list-style-type: none"> ● Display the collaborative learning outcomes ● Connect with friends and respond to feedback via 'Like' and 'Comment' ● Set the private group only participants can enter 	

3.4 Data Collection and Analysis

3.4.1 Literature Review

In this study, the literature review was based on the method proposed by Creswell (2012). “SNS supported learning”, “vocabulary learning”, “SNS”, “collaborative learning” and “SNS supported learning collaborative learning”

were designated as the key words to search for relevant literature. For the literature review, relevant papers will be investigated on from RISS, KISS, Google scholar, SNU Library and other academic websites were investigated.

The purpose of this study is to develop strategies for instructors to design an effective class based on the SNS supported collaborative learning environment to facilitate vocabulary learning to verify the validity of the strategies. Thus, the relevant literature was divided into two parts for review.

Firstly, in order to investigate the feasibility of collaborative learning and SNS in vocabulary learning, the concept and characteristics of vocabulary learning as well as the prior research of vocabulary learning strategies were investigated, and the existing problems were identified. Secondly, according to the concept and characteristics of collaborative learning, SNS explore their advantages in vocabulary learning. In order to understand the feasibility of SNS supported collaborative learning in vocabulary learning, investigated the concept, characteristics and existing research of SNS supported collaborative learning were investigated.

3.4.2 Internal Validation

The expert evaluation for internal rationalization was based on in-depth interviews in face-to-face situations, but only be conducted via e-mail if necessary. First, the research purpose, research problems, research methods, etc. were presented, briefly described, and then in-depth interviews were conducted on the developed support strategies. Subsequently, a survey with the validation questions was conducted. A questionnaire from Rha & Chung (2001) was used and, based on the background of the study, the questionnaire was revised and used, as shown in Table 3.3 below.

After, the deep interviews with the experts were concluded and the interview results were analyzed, and the support strategies were modified by drawing improvements in the support strategy based on feedback collected from the

interviews. In addition, the results for the validation questionnaire were coded to produce means, standard deviations, content validity indices (CVIs), and harmonization among rankers (IRAs) and it was determined whether further internal validation is necessary.

Table 3. 3 Expert Validation Questionnaires for the Strategies

Item	Content
Feasibility	The strategy is appropriate to consider in facilitating vocabulary learning in SNS supported collaborative learning environment.
Explanatory	This strategy illustrates the strategies that should be considered in facilitating vocabulary learning in SNS supported collaborative learning environment.
Usability	The strategy can be useful in facilitating vocabulary learning in SNS supported collaborative learning environment.
University	The strategy can be used universally in facilitating vocabulary learning in SNS supported collaborative learning environment.
Understanding	This support strategy makes it easier to understand the strategies that should be considered in facilitating vocabulary learning in SNS supported collaborative learning environment.

In this study, 4 experts participated in the process of the internal evaluation. The contents of the Table 3.4 show the personal information of the 4 experts.

Table 3. 4 Expert Profile

Expert					Participation	
	Occupation	Major	Experience (in years)	Final Education	1st	2nd
A	Assistant Professor	Curriculum and Instruction	10+	PhD	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B	Researcher	Educational technology	5	PhD	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
C	Non-executive part-time lecturer	Educational technology	4	PhD	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D	Postgraduate student	Educational technology	3	Master's degree	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

3.4.3 External Validation

The response of the instructor and learners were conducted through interviews and questionnaires after the courses designed by the revised instructional strategies. Based on the revised instructional strategies, specific class activities are designed to reflect the general strategies and guidelines in the design strategies

In this process of the course implementation, the textbook is selected from the content of Unit 8 “Coping with an Educational Problem” in the first volume of New College English Integrated Course 2. Students have studied seven chapters in the traditional classroom instructional mode, are familiar with it. Therefore, in the Unit 8, the collaborative learning mode based on WeChat SNS is adopted to allow students to compare the learning effect with the previous learning mode, which is of great significance to this class practice.

The course of this unit is divided into four lessons. Only two of these lessons were conducted in this experiment. Table 15 and Table 16 show the design of instructional activities for two lessons. Instructional design includes teacher activities and corresponding student activities that embody design strategies. Student activities also distinguish between individual tasks and group tasks.

Based on the design strategies and the instructional requirements of the textbook, the instructor designed the teaching and learning activities shown in the Table3.5 below.

Table 3. 5 The Design of Instructional Activities for Lessons 1

Lesson 1		
Stage	Teacher Activities	Student Activities
Pre-Class	-Send key vocabulary points to group chatting room	✧ Group Activities 1. Each group is assigned to find a sample sentence for each vocabulary. After the

		<p>group leader summarizes it, a new Note is generated to share in the group chatting room.</p> <p>2. Each group leader supervises the completion of the group members, and organizes the group members to discuss difficult words in the group</p>
	-Post a text reading task and a video viewing task	<p>◇ Personal Activities</p> <p>1. Read the full text and list own problems, the problem can be about word understanding, long sentence analysis, grammar, etc.</p> <p>2. Watch the video, summarize the main content of the video in oral English, and use the recording function in Note to practice repeatedly</p> <p>◇ Group Activities</p> <p>1. The group members use Voice chat to discuss and solve each other's problems. The remaining problems are sent to the teacher by the group leader.</p>
Class	-Review video content and introduce article topics	Answer the questions
	-Organize groups to discuss issues	<p>◇ Group Discussion:</p> <p>1. Article subject / author writing intention</p>

		<p>2. Article Type</p> <p>3. Article structure</p> <p>4. Clues or basis for article development</p> <p>*Each group will organize the discussion results into an electronic version and share it with the class group.</p>
	<p>- Part1 explained in detail, including:</p> <p>Key words, long and difficult sentences</p>	<p>✧ Personal Activities</p> <p>take notes and think positively about answers</p>
	<p>-Organize each group to discuss the main content of Part1 (given hint).</p>	<p>✧ Group discussion Part1 main content</p> <p>*Each group will organize the discussion results into an electronic version and share it with the class group.</p>
Post-Class	<p>-Posting assignments (and answers)</p>	<p>✧ Personal Activities</p> <p>1. Personal recitation of the word list corresponding to Part1, spot check in the next lesson</p> <p>2. After completing the lesson exercise, fill in the blanks for the choice of words, practice 3 multiple choice questions online, and correct them after the answer is published</p> <p>✧ Group Activities</p> <p>Read the article Part 2, the group discusses its structure through voice call</p>

The content of the table details the implementation of the course. If it is a brief summary of the instructional design, this course consists of three stages: pre-class, class activities, and post-class. Before the lesson, the instructor released the completed list of key words and pre-class group tasks and the WeChat SNS usage guide in the class group (Figure 3.2). Each group leader then assigns tasks in the respective group and urges the team members to complete.

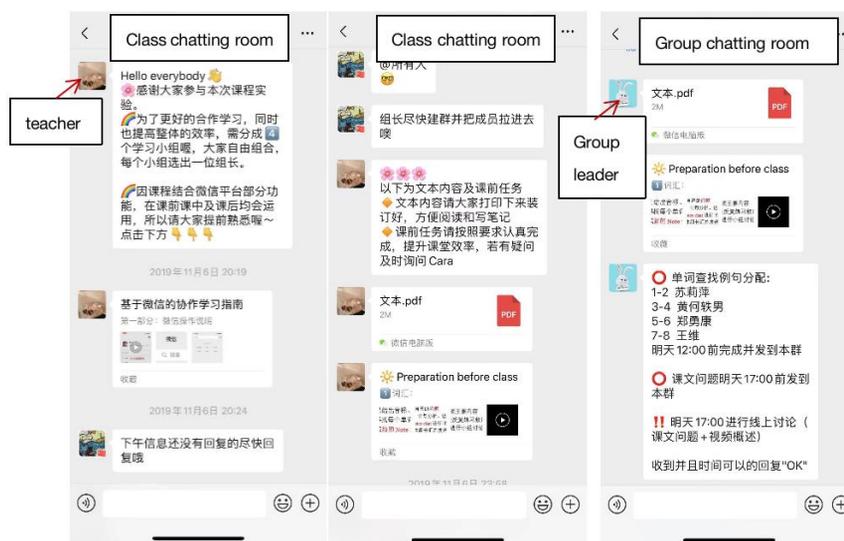


Figure 3. 2 The Activities before Class for Lesson 1

From the content of the instructional design, the main learning activity in Lesson 1 is group discussion, and the discussion results are collected by the group leader and sent to the class group. Everyone in the class can view the results of each group through the information in the group. Furthermore, after class, the teacher sent exercises for students to practice and sent answers after a certain period of time (Figure 3.3).

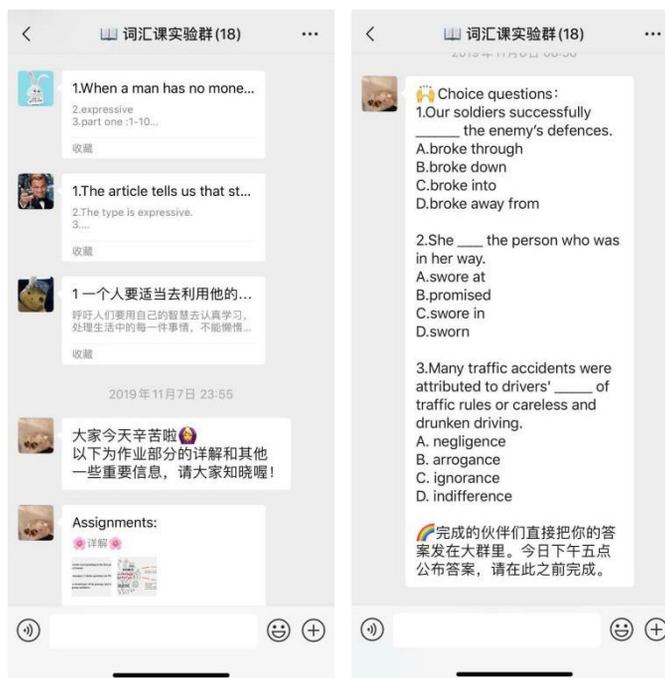


Figure 3. 3 The Activities during and after Class for Lesson 1

The teaching design of Lesson 2 can refer to Table 3.6. Its pre-class activities are similar to those during the class, so I won't go into details. Slightly different is that in this class, the group task of the student finally needs to post the task result to the circle of friends in groups, and then other students make comments based on the content, as shown in Figure 3.4.

Table 3. 6 The Design of Instructional Activities for Lessons 2

Lesson 2		
Stage	Teacher Activities	Student Activities
Pre- Class	Same as above	
Class	Review the main contents of Part 1 → Vocabulary test	<p>✧ Group Activities</p> <p>Send out the answers as soon as the time limit is up</p>
	1) Assign the group reading task: -Part 2; Part 3	<p>✧ Group Activities</p> <p>Each group share the discussion results with the class chatting room</p> <ol style="list-style-type: none"> 1. Writing intention 2. Article Type 3. Article structure 4. Clues or basis for article
	Colze 1. Text-related: Review the full chapter's framework and arrange practice time	<p>✧ Group Activities</p> <p>Send out the answers as soon as the time limit is up</p>
	Organize group discussion tasks around topics	<p>✧ Group Activities</p> <p>Flexibly use the 'Search' function, writing the discussion results into 'Note', sharing the</p>

		group outcomes into the 'Moment' and commenting between groups
Post-Class	Post assignments	<p>✧ Group Activities</p> <p>Discuss the main content and ideas of the article and upload it to the class chatting room.</p>

After the course, questionnaire for the learners' responses was conducted. The questionnaire was consist of two parts, one part of which is surveys inquiring about overall course satisfaction, and the another is surveys of individual strategies. The specific items of questionnaire were different for learners and instructor. The interview conducted with 4 students. Each interview lasted for about 20 minutes and the interviews were recorded with the consent of the interviewers.

The results were analyzed through descriptive statistics. The mean, standard deviation, maximum and minimum values for each item in the questionnaire were analyzed. The interview materials were based on the sequence of the qualitative material analysis process proposed by Creswell (2012). This sequence includes: material exploration and coding; descriptive and topic extraction; the results and the order of the reports.

In this study, 16 learners and 1 instructors majored in English education from Z university participated as the Table 3.7 shows.

Table 3. 7 Learner Profile

Grade	Major	Number
First semester of Freshman Year	Information and Computing Science	16

Chapter 4. RESULTS

The purpose of this research is to develop an instructional strategy based on SNS supported collaborative learning to promote vocabulary learning for college students. Therefore, this research is based on the two stages of model development and model verification in the design development research method. First, a preliminary instructional strategy was formulated by collecting and summarizing the advance literature research results. Then, the internal valid of the instructional strategy was tested through two rounds of expert assessment, and the details of the instructional strategy were revised and supplemented based on the results of the test. Finally, in order to obtain the response of learners and instructors to this instructional strategy, the research combined with real classroom practice. Through analysis on the response of the learners and instructors, the external validity of the instructional strategy was verified, and the limitations of the instructional strategy were also drawn. In the following sections, it described the process of deriving strategies; the results of validity tests that were analyzed through expert evaluation, the responses of learners and the instructor ; and the final revision and improvement of instructional strategies.

4.1 The Initial Instructional Strategies

The initial instructional strategies mainly referred to the four vocabulary teaching strategies from Schmitt and McCarthy (2002), and combined the characteristics of SNS and collaborative learning. Therefore, the initial instructional strategy started from the four dimensions of social strategy, memory strategy, cognitive strategy and metacognitive strategy, and consisted of 7 general strategies and 21 detailed guidelines as the Table 4.1.

Table 4. 1 The Initial Instructional Strategies for Vocabulary Learning on SNS Supported Collaborative Learning

Instructional Strategies	Detailed Guideline	Researcher
1. The mobile vocabulary explanation resource database is established, and the vocabulary is explained in multi-modal form.	1.1 The application of graphics, text, sound and image in the form of multi-modal vocabulary explanation to reduce the burden of memory.	Lund, 1991
	1.2 Provide pre-class preview materials to stimulate previous knowledge structure	Zhang, 2011
2. Provide a collaborative learning guidelines based on WeChat SNS	2.1 WeChat is used for learning in detail, and the preparation time of practice is given, and the corresponding help is provided according to its level of use.	Collins et al, 1989; Kim & Hannafin, 2011
	2.2 Provide guidelines for collaborative learning using WeChat, identify grouping, learning goals, etc.	Kollar et al., 2005

3. Provide support tools to meet the learning needs of query, communication, and sharing	3.1 Realize online resource sharing so that learning materials can be accessed anytime, anywhere	Hamalainen & Vahasantanen, 2011; Jeong & Hmelo-Silver, 2016
	3.2 Fast online access to external learning resources	Thornton & Houser, 2005
4. Improve vocabulary use ability in the cultivation of listening and speaking skills()	4.1 Organize repeated listening training to familiarize learner-self with vocabulary	Ding , 2017
	4.2 Provide opportunities for oral exercises to activate stored language elements so that they can use words and phrases fluently and become spontaneous language users in unconscious situations	Harmer, 2010
5. Improve vocabulary application ability in the cultivation of reading and writing skills	5.1 To arrange a paragraph reading task, to continuously reproduce the new vocabulary as well as repeat the memory, and grasp both the meaning and sense of the sentence, being familiar with the	Elley, 1991

	sentence structure, achieving the purpose of learning in order to practice	
	5.2 Create context, give the subject of writing, put forward the requirement of the application of the vocabulary, and combine the new knowledge with the old knowledge	Nagy & Anderson, 1985
	6.1 Cultivate the ability to understand and use vocabulary in the process of communication and the fusion of new and old knowledge.	Lewis, 1993 ; Craik & Lockhart, 1972
6. Assign collaborative tasks that can activate learners' advanced processing to enhance the long-term retention of the vocabulary knowledge	6.2 Create context and situation suitable for vocabulary, provide learners the opportunities to use vocabulary	Thornbury, 2011
	6.3 Encourage learners to have a higher level of classroom participation and interaction	Hulstijn & Laufer, 2001

	<p>6.4 Create opportunities for interaction between group members, interaction between groups, and joint construction of new vocabulary knowledge</p>	<p>Donato, 1994; Ohta, 2001; Swain, 2000</p>
	<p>7.1 Objective evaluation of the sound, form and meaning of vocabulary in order to master its learning degree</p>	<p>de Hei et al, 2016</p>
<p>7. Provide multi-perspective and multi-dimensional evaluation criteria and evaluation methods</p>	<p>7.2 Provide criteria for instructor-evaluation, peer mutual evaluation and self-evaluation.</p>	<p>Tomcho & Foels, 2012</p>
	<p>7.3 Pay more attention to the evaluation of the learners' learning process, and increase the proportion of the influence of the process evaluation results on the final evaluation.</p>	<p>de Hei et al, 2016</p>
	<p>7.4 Share the results of each group online for mutual evaluation between groups</p>	<p>Tang, 2012</p>

4.2 Internal Valid Result

4.2.1 The First Expert Evaluation

In order to test whether the design strategies derived through the advanced research has internal validity, interviews had been conducted targeted four experts in the field of educational technology, which evaluated the feasibility, explanatory, usability, universality, understanding of the design strategies. A scale was used to measure the responses ranging from 1 indicating "totally disagree" to 4 indicating "agree." Restricted by region, some interviews were implemented online via WetChat Video Chat and each interview lasted between 30 and 50 minutes. Before each interview, design strategies and related materials, such as research background, research issues, research purpose had been sent to each expert to inspect and think about it for a time. The evaluation results after data statistics are shown in Table 4.2 as followed.

Table 4. 2 The First Overall Expert Evaluation Result

	Expert				M	SD	CVI	IRA
	A	B	C	D				
Feasibility	4	2	4	3	3.25	.96	0.75	
Explanatory	3	2	4	4	3.25	.96	0.75	
Usability	2	3	3	3	2.75	.50	0.67	0.86
Universality	4	3	4	3	3.50	.58	1.00	
Understanding	2	2	3	3	2.50	.58	0.50	

As can be seen from Table IV-2, the average value, standard deviation, content validity index (CVI,) inter-rater agreement (IRA) were statistical analyzed based on the collected data. From the IRA value of 0.86, it can be seen that the opinions of experts are almost perfect agreement. The average value of 2.50 to 3.50 indicated that the overall evaluation of the design strategies remained neutral. In particular, it can be seen from the CVI values that, except for the universality, the CVI values of other indicators are less than 0.8, which interpreted that experts agreed that these initial instructional strategies had some difficulties in usefulness. In addition, there are problems in the formulation and explanation of instructional strategies, making it impossible for instructors to accurately understand the intention of the strategies. At the same time, experts were doubt about whether the instructional strategy can be effectively implemented. These opinions also became the reference for the second revision.

The results of expert assessments of specific guidelines are shown in Table 4.3. Some examples have been appropriately added to the design strategy to help experts understand the content better. For each specific guideline, the experts scored according to their own understanding and proposed amendments in the interview.

Table 4. 3 The First Expert Evaluation Result for Specific Guideline

General Instructional Strategies and Specific Guidelines	M	SD	CVI	IRA
1. The mobile vocabulary explanation resource database is established, and the vocabulary is explained in multi-modal form.				
1.1 The application of graphics, text, sound and image in the form of multi-modal vocabulary explanation to reduce the burden of memory.	3.50	.58	1.0	
1.2 Provide pre-class preview materials to stimulate previous knowledge structure	3.25	.96	0.8	
2. Provide a collaborative learning guidelines based on WeChat SNS				
2.1 WeChat is used for learning in detail, and the preparation time of practice is given, and the corresponding help is provided according to its level of use.	3.00	.82	0.8	0.93
2.2 Provide guidelines for collaborative learning using WeChat, identify grouping, learning goals, etc.	3.50	1.00	0.8	
3. Provide support tools to meet the learning needs of query, communication, and sharing				
3.1 Realize online resource sharing so that learning materials can be accessed	3.50	.58	1.0	

anytime, anywhere			
3.2 Fast online access to external learning resources	3.00	1.16	0.5
4. Improve vocabulary use ability in the cultivation of listening and speaking skills			
4.1 Organize repeated listening training to familiarize learner-self with vocabulary	3.25	.96	0.8
4.2 Provide opportunities for oral exercises to activate stored language elements so that they can use words and phrases fluently and become spontaneous language users in unconscious situations	3.00	.82	0.8
5. Improve vocabulary application ability in the cultivation of reading and writing skills			
5.1 To arrange a paragraph reading task, to continuously reproduce the new vocabulary as well as repeat the memory, and grasp both the meaning and sense of the sentence, being familiar with the sentence structure, achieving the purpose of learning in order to practice	3.25	.96	0.8
5.2 Create context, give the subject of writing, put forward the requirement of the application of the vocabulary, and combine	2.75	.96	0.5

the new knowledge with the old knowledge

6. Assign collaborative tasks that can activate learners' advanced processing to enhance the long-term retention of the vocabulary knowledge

6.1 Cultivate the ability to understand and use vocabulary in the process of communication and the fusion of new and old knowledge. 2.75 .50 0.8

6.2 Create context and situation suitable for vocabulary, provide learners the opportunities to use vocabulary 3.25 .96 0.8

6.3 Encourage learners to have a higher level of classroom participation and interaction 3.00 .82 0.8

6.4 Create opportunities for interaction between group members, interaction between groups, and joint construction of new vocabulary knowledge 3.50 .58 1.0

7. Provide multi-perspective and multi-dimensional evaluation criteria and evaluation methods

7.1 Objective evaluation of the sound, form and meaning of vocabulary in order to master its learning degree 3.25 .96 0.8

7.2	Provide criteria for instructor-evaluation, peer mutual evaluation and self-evaluation.	3.75	.50	1.0
7.3	Pay more attention to the evaluation of the learners' learning process, and increase the proportion of the influence of the process evaluation results on the final evaluation.	3.00	.82	0.8
7.4	Share the results of each group online for mutual evaluation between groups	3.00	.82	0.8

From the data of the evaluation results, it can be seen that the average value for each specific guideline is mainly distributed between 2.75 to 3.75. Except for the Guidelines 3.2 (CVI = 0.5) and 5.2 (CVI = 0.5), the CVI values of the other specific guidelines are above 0.8, indicating that the experts have a high degree of confidence in the evaluation. Moreover, the IRA value is 0.93, which indicates that the evaluations of experts are highly uniform. However, it also includes special cases. For example, in Guideline 2.2, three experts rated 4 points, but one expert gave 2 points. For such slightly extreme guideline, it is necessary to focus on reanalysis.

In addition to the data, the evaluation results also include recommends and suggestions for modifying strategies by interviews. The evaluation results of the interview can be simply summarized into three parts. They are configuration, content and expression.

First, from a structural perspective, the overall strategy lacks a certain degree of logic, and the features of SNS and collaborative learning are not highlighted in general strategies and guidelines. Therefore, it is necessary to add relevant content in subsequent amendments. Second, in terms of content, some guidelines are too general and repetitive, and lack clarity. Finally, there are some problems with the accuracy, refinement, and professionalism of the description language. It is necessary to reconsider and modify the terms. After finishing the modification, the contents in Table 4.4 below are summarized.

Table 4. 4 The Revising Suggestions for Initial Instructional Strategies by Experts

Category	Recommends	Revised Content
structure	Examples do not match or are missing from specific guidelines	<ul style="list-style-type: none"> ■ Increase or delete examples as appropriate, specifying the objects and behavior of the

	examples
	<ul style="list-style-type: none"> ■ Divide the overall strategies in the order of before-class> class> after-class
	<ul style="list-style-type: none"> ■ Reflect the characteristics of SNS that can share and communicate anytime, anywhere ■ Define how collaborative learning implement in vocabulary learning
	<ul style="list-style-type: none"> ■ Remove unnecessary guidelines to make them more accurate and targeted
content	<ul style="list-style-type: none"> ■ Increase network environment related strategies and specific guidelines
	<ul style="list-style-type: none"> ■ Detailed evaluation content, formulate evaluation standards, and provide measurement

tools

expression

Description language is not concise and professional

- Streamline sentences and delete unnecessary expressions
- Try to use more professional vocabulary in terms

The interpretation of the specific guidelines is not concrete and the main subject is not specific

- Revise the meaning of the ambiguous, specify the target of the guideline, the timing of implementation and the way how to implement

4.2.2 The Second Expert Evaluation

After the first expert evaluation, the instructional strategies and specific guidelines were modified based on the suggestions from the experts. The content of this chapter is the second expert evaluation of the revised strategies. The experts participating in the first evaluation also participated in the second expert evaluation. Therefore, a total of 4 experts conducted internal effective inspections as well. The evaluation results are shown in Table 4.5 below.

Table 4. 5 The Second Overall Expert Evaluation Result

	Expert				M	SD	CVI	IRA
	A	B	C	D				
Feasibility	4	4	4	4	4.00	.00	1.00	
Explanatory	3	3	4	4	3.50	.58	1.00	
Usability	4	4	4	4	4.00	.00	1.00	0.98
Universality	4	4	3	3	3.50	.58	1.00	
Understanding	4	4	4	4	4.00	.00	1.00	

As can be seen from Table IV-6, the IRA value of 0.98 can be seen that the comments of experts are almost perfect agreement. The average value of 3.50 to 4.00 indicated that experts have a relatively agreeable attitude to the revised design strategies. Meanwhile, the CVI values are all displayed as 1.00, which also showed the positive feedback from experts on the revised instructional strategies. Similarly, experts also evaluated the revised general strategies and specific guidelines. The evaluation results are shown in Table 4.6.

Table 4. 6 The Second Expert Evaluation Result for General Instructional Strategies and Specific Guidelines

General instructional Strategies and Specific Guidelines	M	SD	CVI	IRA
1. Independently establish mobile vocabulary explanation resource database to illustrate vocabulary in multi-modal form	4.00	.00	1	
1.1 Apply the 'Note' function in WeChat to present vocabulary explanations in the form of multi-modality such as textual interpretation, pronunciation, related pictures or videos.	4.00	.00	1	
1.2 Deliver the content in the vocabulary explanation resource to learners through the 'group chatting room' function of WeChat before and after class, so that it is easy to review, preview at any time.	3.75	.50	1	0.99
2. Provide instructions to direct learners to conduct SNS supported collaborative learning through WeChat to ensure the correct use of learning tools and the effective completion of collaborative tasks	3.75	.50	1	
2.1 Send the operation instruction of WeChat as a specific learning tool in the chatting room and urge learners to be familiar with the operation before class.	3.75	.50	1	
2.2 Communicate with learners in chatting room to	3.50	.58	1	

formulate the group constellation during collaborative learning; set learning objectives with the desired interaction; clarify assessment content and assessment criteria.

3. Check the stability of the classroom network environment and the situation of learning tools in advance to ensure the favorable implement of instruction	4.00	.00	1
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3.1 Check the stability of Wi-Fi in the classroom to make sure a smooth network during the course.	4.00	.00	1
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3.2 Supervise each learner to carry a mobile electronic device that downloads WeChat Application and can open 4G network, add WeChat accounts for class members and instructors, and join each group as needed.	4.00	.00	1
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4. Flexible use of the WeChat ‘search’, ‘communication’, ‘sharing’ these three functions to meet the various needs of the collaborative learning process	3.25	.50	1
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4.1 Utilize ‘search’ function to enable fast online access to external learning resources to assist in the completion of collaborative tasks.	4.00	.00	1
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4.2 The ‘private chat’ and ‘group chat’ features offer a platform for multi-directional communication, where instructors can communicate with learners	4.00	.00	1
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and provide timely support, while encouraging learners discussing learning content in groups.			
4.3 Group members, group-group, instructor-learner share learning resources in the form of files or chats in the group chatting room at any time.	3.75	.50	1
5. Guide each group to conduct repeated listening and speaking training, mutual supervision, and achieve common progress	3.50	.58	1
5.1 The ‘voice’ function in WeChat provides the opportunity to listen and speak repeatedly to master the pronunciation of vocabulary.	3.50	.58	1
5.2 Conduct collaborative tasks with listening and speaking as the core in various forms, activate stored vocabulary elements, and become spontaneous vocabulary users.	3.75	.50	1
6. Integrate vocabulary into reading and writing tasks, and achieve the purpose of learning with the combination of group collaboration and personal tasks.	3.75	.50	1
6.1 Through personal reading and group discussion, understand the meaning and meaning of the vocabulary in the paragraph, and use it flexibly.	3.75	.50	1
6.2 Create situational role-playing, assign paragraph writing tasks within each group to complete the	3.50	.58	1

contextual dialogue under the rules.

7. Motivate learners' motivation for learning and collaboration to increase participation in learning with a positive attitude for enhancing long-term retention of vocabulary knowledge	3.50	.58	1
7.1 Implement incentives and monitoring mechanisms to sustain learning motivation.	3.50	.58	1
7.2 Set up collaborative tasks for group-group competition to drive collaboration motivation, share responsibility and solve problems.	4.00	.00	1
7.3 Enrich learning materials to assist instruction and enhance learning interest and enthusiasm in the integration of new and old knowledge	4.00	.00	1
7.4 Observe the collaborative learning process of each group at any time in the group chatting room, give guidance and provide supplementary materials when necessary	3.75	.50	1
8. Provide multi-perspective and multi-dimensional assessment criteria and evaluation methods	3.75	.50	1
8.1 Send the question cards in the group chatting room to answer to objectively evaluate the mastery of vocabulary use.	4.00	.00	1

8.2 Set evaluation criteria for all collaborative learning outcomes, and calculate the evaluation results into the final grade	3.50	.58	1
8.3 Pay more attention to the evaluation of the learners' learning process, and increase the proportion of the influence of the process evaluation results on the final evaluation.	3.50	.58	1
8.4 Develop an evaluation scale for instructor assessment, peer assessment under this context.	3.75	.50	1

From the data of the evaluation results, it can be seen that the IRV value for overall design strategies is 0.99, which indicated a high degree of consistency in the evaluation results of the experts. It means that the evaluation is highly reliable and the results are informative. Furthermore, the average value for each specific guideline is mainly distributed between 3.50 to 4.00, which showed the positive assessment result reflected by experts. In addition, the CVI values which are all displayed as 1.00 also supported the same conclusion.

The results were summarized in Table 4.7. The instructional strategies were second modified according to these suggestions.

Table 4. 7 The Revising Suggestions for the Second Instructional Strategies by Experts

Category	Recommends	Revised Content
structure	Adjust the order of presentation of specific	Reasonably adjust the sequence of specific guidelines

	strategies	<p>in accordance with the logical relationship (8.4-> 8.1-> 8.3-> 8.2)</p> <ul style="list-style-type: none"> ■ Adjust the stage of the specific guideline presentation based on the timing of strategy use (4)
	Unclear subject in specific guidelines	<ul style="list-style-type: none"> ■ Indicate the specific subject in specific guidelines to avoid confusion (5.1)
content	The characteristics of collaborative learning are not emphasized enough	<ul style="list-style-type: none"> ■ Integrate group discussions in personal learning activities(6.1)
	Missing description example	<ul style="list-style-type: none"> ■ Add examples to better explain the meaning of specific guidelines (7.1)
expression	The semantic expression is not clear enough	<ul style="list-style-type: none"> ■ Replace the original expression with more accurate words (6.1; 7)

4.3 Response of the Learners and Instructors

4.3.1 Learners' Response

In order to get the responses of learners on design strategies, the research conducted questionnaire surveys and face-to-face interviews with learners participating in the course. Among the 16 learners who participating in the course, a total of 12 questionnaire results were received. In addition, 4 learners from four groups participated in face-to-face interviews. The content of the interview is mainly based on the advantages, weakness and modification suggestions of the design strategies.

The content of the questionnaire consists of 2 types of questions, consisting of 7 parts. Multiple choice is consisting of overall satisfaction (1~8), recognition of group collaborative learning (9~12), recognition of SNS supported learning (Table 13) and the satisfaction for each stage of class (Table 1~14). Open question contains advantages, disadvantages and modification suggestions of the instructional strategies. The result of the learner responses is shown as Table 4.8.

According to the data, the average value of the satisfaction with the overall design strategy is 3.7, indicating that the learners maintain a positive attitude towards the overall design strategy. Meanwhile, the average values of all items are between 3.68 and 3.94. Among them, the average satisfaction of specific guidelines is as high as 3.94, referring that learners also have high affirmation of specific guidelines.

Table 4. 8 The Result of the Learners Response

Type	Statements	Issue	M	SD
Multiple choice	Overall awareness and attitude towards SNS supported collaborative learning	8	3.70	0.64
	Recognition of group collaborative learning	4	3.68	0.73
	Recognition of SNS supported learning	1	3.82	0.57
	Satisfaction with pre-class preparation activities	3	3.94	0.55
	Satisfaction with collaborative learning activities in class	8	3.94	0.65
	Satisfaction with post-class review and evaluation activities	3	3.94	0.49
Open question	Suggestion, advantage, limitation for SNS supported collaborative learning			

In addition, it can be seen from the table that learners have a high evaluation of specific guidelines presented pre-class ($M = 3.94$, $SD = 0.55$), class activities ($M = 3.94$, $SD = 0.65$), and after class ($M = 3.94$, $SD = 0.49$).

Specifically, at each question in the questionnaire (Appendix 3), the few items with lower average values are mainly focused on the discussion of group activities and the acquisition of new knowledge. In particular, the statement "Our team members are actively involved and have completed the final task well" ($M = 3.27$, $SD = 0.45$) has the lowest average score. From this, it can be inferred that there are relatively obvious differences in the learning situation of members in the group. Correspondingly, the average value of "Through group

activities can achieve better learning objectives" ($M = 3.55$, $SD = 0.78$) is naturally relatively low. In addition, learners also maintained a neutral attitude towards learning new knowledge ($M = 3.55$, $SD = 0.78$) in addition to textbook content through the SNS supported collaborative learning.

On the other hand, learners have agreed that the implementation of rewards and supervision mechanisms can promote their participation in the classroom ($M = 4.27$, $SD = 0.62$), especially the supervision of the group leader in the group at anytime and anywhere can improve their learning subjective initiative ($M = 4.09$, $SD = 0.51$), the setting of competitive tasks is very helpful for actively engaging in vocabulary learning ($M = 4.09$, $SD = 0.69$).

Not only collecting response from learners through questionnaires, the research also conducted in-depth interviews with learners to get more information. The content of interviews mainly contained learners' views on specific guidelines for design strategies, the strengths and weakness of design strategies, and suggestions for improvement. A simple survey of these contents was also done in the questionnaire, so the interview results appropriately combined with the answers to the open questions in the questionnaire. The following Table 4.9 is a summary of the interview results.

Table 4. 9 Learners' Response to the Strengths of the Instructional Strategies

Category	Statement	Interview	Survey
Strengths	The way of collaboration learning stimulated learning	3	4
	Thoroughly preview before class to promote class efficiency	2	4
	The function of the SNS like sharing, communication, editing are	2	3

convenient and fast

Provide more vocabulary use

opportunities to help deepen

1

2

understanding

First of all, a few learners have mentioned that the form of collaborative learning has a positive effect on the motivation of learning. Especially, the supervision of the group leader effectively strengthens the learning motivation of the group members. In the SNS supported collaborative learning, the group leader assigns tasks online and urges group members to complete them together. In this way, the learners who have negative learning attitude can have motivation to learn as well. Meanwhile, in the process of completing group tasks and repeatedly discussing problems with group members, vocabulary is repeatedly mentioned and used, providing learners with opportunities to apply and practice.

Vocabulary learning is always very boring, but if there are group members together, it will make me more motivated to learn, because the final grade not only affects me, but also affects my group members, so I have to work hard for collective honor. (Learner A)

I need to complete group tasks before class. This repeated application and repeated memory process can deepen my understanding of vocabulary. (Learner C)

Some learners mentioned that pre-class previews improved class efficiency. According to preview key vocabulary in advance and using the vocabulary purposefully to complete the learning task, learners can be familiar with or even master the vocabulary in advance, at least with a certain

understanding of the semantics and usage of vocabulary. In this way, when the teacher puts the vocabulary into the reading paragraph during the lesson, the learner can master it more effectively.

The assignment of pre-class tasks is small and precise. I can probably grasp its usage when searching for example sentences for words, and I can discuss it with the group members if I feel unsure. The process of discussion also allows I have a deeper understanding ... (Learner B)

Pre-class previews allow me to clearly understand what to preview and to what extent, so that I have a general understanding of the content of the class, and I will be able to grasp it during the class ... (Learner C)

In the interview, four learners all stated that they had not taken classes with WeChat SNS supported learning before, but they said that such a learning method still improved efficiency to some extent. And they all expressed their affirmation on the effectiveness of the functions in WeChat.

I didn't know that there was a Note function in WeChat before, but after using it this time, it feels quite easy to use. It is very convenient and can help me record some simple notes. And, use this presenting task more clearly ... (Learner D)

I often use WeChat, so methods like voice discussions are convenient and can be discussed anytime, anywhere ... (Learner A)

When asking questions about the weakness of the course, many learners mentioned the imperfection of the supervision mechanism and the lack of detailed evaluation standards. This supervision mechanism includes control

over student participation and supervision of task completion. The evaluation criteria reflect how to evaluate student participation. Specific content can refer to the following Table 4.10.

Table 4. 10 Learners' Response to the Weakness of the Instructional Strategies

Category	Statement	interview	Survey
Weakness	Insufficient supervision mechanism (including supervision of participation and task completion)	3	6
	Lack of evaluation criteria for learning output, resulting in poor evaluation	2	3
	Unskilled use of WeChat leads to reduced efficiency	2	2
	The learning atmosphere is not enthusiastic and the participation is low	1	2

It is difficult to control on the supervision mechanism, and it is easy for speculation. (learner B)

I think learning and discussion may not be as effective as face-to-face, because the participation of each group member cannot be guaranteed online, and there is no pressure to get everyone involved ... (learner D)

The last task posted in the circle of friends, many people have only good comments such as good and nice, so it doesn't make sense ... (learner A)

Therefore, more detailed monitoring mechanisms and more specific evaluation standards are necessary. This brought a point of view to the

subsequent revision. In addition, some students mentioned that the submission method of learning output is not limited to Moment. The complex environment of the Moment can easily ignore information.

The Moment is a very complicated environment. Even if the information I send is only visible to the class members, I still have a lot of other information interference after refreshing. I think I can send to class group directly ... (learner C)

In summary, the suggestions of learners focus on the improvement of the supervision mechanism, the refinement of evaluation standards, and the presentation of learning output. These are suggestions worth considering.

4.3.2 Instructor' Response

In order to know about the instructor's response. After the course, an in-depth face-to-face interview was conducted with the instructor on the weaknesses in design strategies and suggestions for improvement. In addition, from the perspective of the instructor, interviews were also conducted on issues related to teaching strategies such as ease, explanatory, usability, universality, understanding.

From the interview results, first of all, the instructor considered that the presentation of specific guidelines is not detailed enough. In other words, it is difficult to make a clear connection with the actual classroom from the presentation of specific guidelines. Insufficient implementation in detail.

However, the instructor has questions about the feasibility of some specific guidelines. For example, the role-playing tasks mentioned in 6.2. Role-playing using WeChat SNS in the classroom is limited by functions, self-level, and other issues. Therefore, when designing collaborative tasks, it is necessary to consider practical feasibility as much as possible.

In addition, the design strategy in the actual classroom presentation, whether before, during or after class, the discussion atmosphere in the collaborative group has not formed. This is not good for task-driven collaborative learning. Therefore, how to motivate learners' learning motivation and make them actively participate in learning needs to be reflected in subsequent modifications.

Finally, similar to the feedback from learners, the educators also believe that the supervision mechanism has not been fully reflected. The supervision here includes the faculty's confirmation of the learners' pre-class tasks, the completion of the post-class learning outputs, and the dedication of each group member.

Therefore, after in-depth interviews with learners and the instructor, the modification suggestions obtained can be summarized as the following table. The final design strategies were also revised in accordance with this integration recommendation, as shown in the Table 4.11 below.

Table 4. 11 The Comprehensive Revision Comments for the Instructional Strategies

Suggestions from Learners and the Instructor		Revisions
Overall	Improve the supervision mechanism	-Increase the evaluation scales (group peer evaluation scales and teacher evaluation scales)
Pre-class	Arrange the group reasonably	-Add relevant content of grouping guidelines (divide groups according to the level of participation)
Class	Facilitate group discussions	-Increase the specific guidelines to clarify the division of work within

		the group
	Low feasibility of role-playing activities	-Delete part of role playing
	Unclear incentive mechanism	-Added examples
Post-class	Implementing norms for student comments	-Added evaluation criteria for comment

4.4 The Final Instructional Strategies

Combining the results of expert evaluations with the responses of learners and instructors, the final instructional strategies were finally derived as the Table 4.12 shows. These strategies divided into three stages according to the course process, consisted of 8 general strategies and 21 specific guidelines.

Table 4. 12 The Final Instructional Strategies for Vocabulary Learning based on SNS Supported Collaborative Learning

Stage	General instructional Strategies and Specific Guidelines
<p>Pre-class Preparation stage</p>	<p>1. Establish mobile vocabulary resource to illustrate vocabulary in multi-modal form</p> <p>1.1 Apply the ‘Note’ function in WeChat to present vocabulary explanations in the form of multi-modality such as textual interpretation, pronunciation, related pictures or videos.</p> <div data-bbox="486 549 807 939" style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;">  <p>The screenshot shows a WeChat 'Note' interface. At the top, it says 'Note' with a back arrow and a three-dot menu. Below that, it says 'From Jessica老师 初中生 - 发音10-Jes... 2019-03-25'. The main content includes a video player with the title 'The cows eat the grass' and a duration of 00:51. Below the video, there is text explaining the pronunciation of 'cows' and 'grass', and a tip about the pronunciation of 'the' and 'eat'.</p> </div> <p>Ex:</p>
	<p>1.2 Deliver the content in the vocabulary explanation resource to learners through the ‘group chatting room’ function of WeChat before and after class , so that it is easy to review, preview at any time.</p> <p>2. Provide instructions to direct learners to conduct SNS supported collaborative learning through WeChat to</p>

ensure the correct use of learning tools and the effective completion of collaborative tasks

2.1 Send the operation instruction of WeChat as a specific learning tool in the chatting room and urge learners to be familiar with the operation before class.

2.2 Evaluate learner engagement in advance and determine group composition based on participation; set learning objectives with the desired interaction; clarify assessment content and assessment criteria.

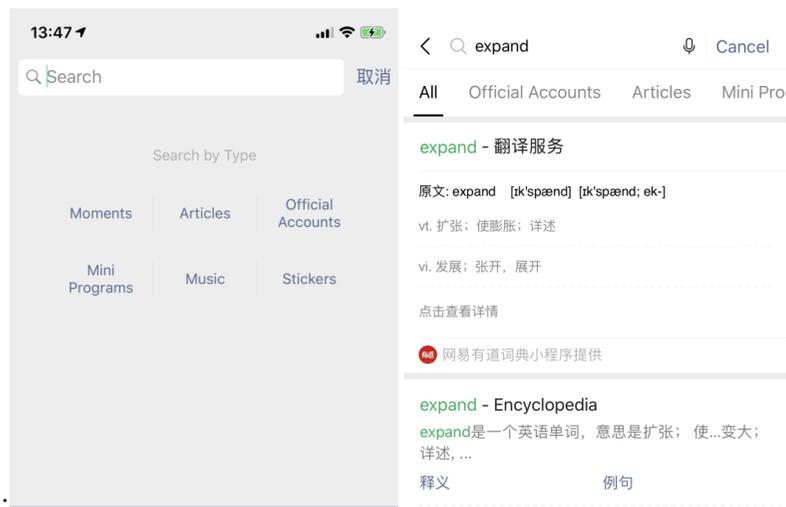
3. Check the stability of the classroom network environment and the situation of learning tools in advance to ensure the favorable implement of instruction

3.1 Check the stability of Wi-Fi in the classroom to make sure a smooth network during the course.

3.2 Supervise each learner to carry a mobile electronic device that downloads WeChat Application and can open 4G network, add WeChat accounts for class members and instructors, and join each group as needed.

4. Flexible use of the WeChat ‘search’, ‘communication’, ‘sharing’ these three functions to meet the various needs of the collaborative learning process

4.1 Utilize ‘search’ function to enable fast online access to external learning resources to assist in the completion of collaborative tasks.



Ex:

4.2 The 'private chat' and 'group chat' features offer a platform for multi-directional communication, where instructors can communicate with learners and provide timely support, while encouraging learners discussing learning content in groups.

4.3 Group members, group-group, instructor-learner share learning resources in the form of files or chats in the group chatting room at any time.

Class Activities Stage

5. Guide each group to conduct repeated listening and speaking training, mutual supervision, and achieve common progress

5.1 The 'voice' function in WeChat provides the opportunity for learners to listen and speak repeatedly to master the pronunciation of vocabulary.

5.2 Conduct collaborative tasks with listening and speaking as the core in various forms, activate stored vocabulary elements, and become spontaneous vocabulary users.

6. Integrate vocabulary into reading and writing tasks, and achieve the purpose of learning with the combination of group collaboration and personal tasks.

6.1 Through personal reading followed by group discussion, understand the meaning and meaning of the vocabulary in the paragraph, and use it flexibly.

6.2 Create paragraph writing assignment within each group to complete the contextual dialogue.

7. Facilitate learners' motivation for learning and collaboration to increase participation in learning with a positive attitude for enhancing long-term retention of vocabulary knowledge

7.1 Implement incentives and monitoring mechanisms to sustain learning motivation.



Ex: In addition to motivating learners in the form of public encouragement in groups as shown, the incentive system can also be scored. Count points into final grades.

7.2 Set up collaborative tasks for group-group competition to drive collaboration motivation, share responsibility and solve problems.

7.3 Enrich learning materials to assist instruction and enhance learning interest and enthusiasm in the integration of new and old knowledge

7.4 Observe the collaborative learning process of each group at any time in the group chatting room, give guidance and provide supplementary materials when necessary

Evaluation

and

8. Provide multi-perspective and multi-dimensional assessment criteria and evaluation methods

Feedback Stage

8.1 Develop an evaluation scale for instructor assessment, peer assessment

statement	Member1	Member 2	Member 3
Most of the time he/she participates enthusiastically and have positive performance.			
His/her advice is always helpful to me			
He/she often encourages and urges the other team members to actively participate in the collaboration.			
He/she can finish his/her work and study tasks on time.			
I am satisfied with his/her performance.			
His/her contribution to the team is outstanding.			
I would be happy to regroup with him/her if given the chance.			
Total			

(*Score 5,4,3,2,1 on a scale from "very good" to "very bad";

Team name			
Team leader		Team member	
group leader	1. The team leader can actively serve the team		
	2. Able to distribute tasks evenly and reasonably		
	3. Able to collect and organize materials		
Team work	1. Each member can actively participate in group activities		
	2. Each member has his or her own specific task and can earnestly complete the task		
	3. Team members can listen carefully and learn from each other		
	4. Pleasant atmosphere and good effect of group cooperation		
Group outcome evaluation			
What are the shortcomings of group activities (e.g., information retrieval, analysis, discussion, summary, etc.)?			

(*Score 5,4,3,2,1 on a scale from "very good" to "very bad")

8.2 Send the question cards in the group chatting room to answer to objectively evaluate the mastery of vocabulary use



Ex:

8.3 Pay more attention to the evaluation of the learners' learning process, and increase the proportion of the influence of the process evaluation results on the final evaluation.

8.4 Set evaluation criteria for all collaborative learning outcomes, and calculate the evaluation results into the final grade.

Chapter 5. DISCUSSION AND CONCLUSION

5.1 Discussion

5.1.1 The Effect of the Instructional Strategies

This study aims to provide and design strategies that guides instructors to create an SNS supported collaborative learning mode for facilitating vocabulary learning. It is hoped that it can help learners improve their vocabulary skills through various social group learning activities using a collaborative learning environment created by SNS. The specific effects are as follows.

Firstly, SNS supported collaborative learning has a positive effect on vocabulary learning. From learner interviews and questionnaires, we can see that learners have always maintained a positive attitude towards these instructional strategies. Compared with traditional vocabulary teaching, the course under SNS supported has increased interest, timeliness, and interaction for learners, which got the same result with Jin (2018). Combined with the characteristics of SNS, whether in the classroom or online, learners are more likely to interact with others, thus constantly generating new learning. In addition, collaborative learning can promote communication between learners, learn from each other's learning methods and attitudes, and promote their own learning initiative. SNS further guarantees the efficiency, timeliness and openness of interaction during collaborative learning.

Secondly, SNS supported collaborative learning as a new kind of instruction was interesting, helpful, and useful in increasing learners' motivation and engagement to vocabulary learning. Audiovisual multi-sensory, multi-modal presentation and output of vocabulary. Effective combination of language input and output increases the interest of vocabulary learning and stimulates students' interest. The collaborative learning also allows learners to

compete in groups and within groups inspire their own motivation to learn and improve ability to learn. This result is consistent with the original intention of Lund (1991) when proposed this view.

Finally, SNS supported collaborative learning has practical significance in applying to vocabulary learning. As a large and widely used SNS, it has the advantages of Interest, practicality, affordance, and interactivity. And, many studies have shown that It has a positive effect on the motivation and learning attitude of vocabulary learning. On the other hand, the combination of collaborative learning and vocabulary learning is also feasible. Collaborative learning can create more effective communication and interaction environment for vocabulary learning, enabling learners to create more vocabulary learning opportunities while using vocabulary continuously. Therefore, combining these three concepts can explore more learning possibilities and create more teaching and learning methods for vocabulary learning. This is not only the hope to explore a variety of learning methods in vocabulary learning in order to obtain richer learning results, but also the requirements and challenges for instructors and learners in the new era.

5.1.2 Suggestion

In interviews with learners and instructors participating in the course, although the roles and functions of the two are different, their suggestions on the revision of teaching strategies from different perspectives are mainly the following two points.

The first thing that has to be mentioned is the composition of the group. Grouping should follow certain principles, rather than simply grouping within the learner based on the alienation of relationships, which violates the principle of collaborative learning, division of labor and cooperation. Therefore, the combination of groupings must be scientific, and be reasonably matched and adjusted according to the learning foundation and personality characteristics. This requires teachers to have a certain understanding of students, grasp the characteristics of students' learning in advance, and can help future learning.

Secondly, both learners and educators generally reflect the imperfect supervision mechanism in teaching strategies. In view of this fact, we must first analyze the subject and the implementer of supervision. In different stages and tasks, the subject and practitioner of supervision will change. For example, before the lesson, the team leader and the teacher together monitor the completion of the tasks of the members of the group. However, from the learner's response, the supervision at this stage has not achieved results. This requires the team leader to clarify the division of labor in the group before coordinating tasks, including a complete time planning and task allocation table, in order to play a role of supervision and inspection.

In addition, due to the time limitation of this study, only two classes of experiments were conducted, and the amount of data obtained was small enough to support the conclusion of the validity of the instructional strategies. Effectiveness research requires a large amount of data to draw the results. Therefore, a large number of regular course implementations are needed in subsequent studies. Regularly placing courses can make learners more familiar

with the teaching format, and the data obtained from them will be more reliable. Multiple classroom implementations can help the learner better understand the learner's response to better improve the instructional strategies. Moreover, it is not only necessary to carry out a large number of repeated experiments, but also to quantitatively study the learning results to better verify the effectiveness of the instructional strategies.

5.2 Conclusion

5.2.1 Summary and Conclusion

The purpose of this study is to develop the design strategies that promote vocabulary in SNS supported collaborative learning. The issues of this study are : 1) What are the instructional strategies of SNS supported collaborative learning for vocabulary learning?; 2) Are the instructional strategies of SNS supported collaborative learning internally valid?; 3) What is the response of the learners and instructors towards the instructional strategies of SNS supported collaborative learning?

In order to solve these three problems, this study is based on the type 2 model research in Richey & Klein (2014) 's design and development research method. The validity of the initial teaching strategy obtained is tested and revised to export the final design strategies. First of all, the initial strategies and specific guidelines were derived through a discussion of the advance researches. After that, four experts major in educational technology conducted a validity test on the initial strategies. Combining with the analysis results of in-depth interviews, the revised design strategies are divided into three stages according to the course process, consisting of 8 general teaching strategies and

21 specific guidelines. These instructional strategies were then applied to actual classroom teaching at a university. After the course, the responses of the instructor and learners participating in the course can be analyzed to find out the external validity test results. The response of the learner mainly focused on the incomplete of the supervision mechanism, while the instructor raised the point that the evaluation criteria were not clear enough. Finally, the strengths, weaknesses, and improvement points of the design strategies proposed by learners and instructor are synthesized to derive the final design strategy.

After conducting in-depth interviews with learners and the instructor, and by analyzing the reactions of learners and instructors, we can draw the conclusions that SNS supported collaborative learning mode has practical application significance for vocabulary learning.

First of all, in the learning process, it can not only deepen the deep understanding of vocabulary, strengthen the long-term memory of vocabulary, but also continuously create new learning opportunities ° Secondly, SNS supports collaborative learning outperformed the traditional learning in vocabulary gains. The collaborative group in SNS supports multiple ways of communication, and learners can perform offline or online one-to-many, many-to-many interactive communication. The example sentences in the group's internal learning are input, output, and other activities such as reading, listening, and speaking, judging each other, cultivating active learning ability, and carrying out collaborative learning to transform the learned knowledge into intrinsic language knowledge and enhance output ability. This interactive input helps learners learn more vocabulary than simple input.

5.2.2 Implication

Different from the traditional learning mode, SNS breaks through the limitation of time and space on learning and realizes the synchronization and asynchronisation of learning time and place. The learning mode of SNS supported collaborative learning, on the premise of ensuring the overall stability of the entire teaching activity structure and activity procedures, also reflects a certain degree of flexibility, and is a useful aid to classroom teaching. Since vocabulary learning and classroom teaching are carried out simultaneously, integrated learning inside and outside the classroom helps to strengthen the teaching effect. Group collaborative learning develops students' ability to learn independently and cooperatively. Audiovisual multi-sensory, multi-modal three-dimensional presentation and output of vocabulary, effective combination of language input and output, not only increases the interest of vocabulary learning, stimulates the interest of students, and helps to achieve traditional maintenance and receptive learning to innovation and the transformation of constructive learning to help students truly master the deep knowledge of vocabulary. This input-absorption-output mode gradually changes students from passive learning to active learning, which is a new mode of vocabulary teaching and learning. The learning mode of SNS supported collaborative learning takes full advantage of the miniaturization of mobile phone learning content, the flexibility and intelligence of learning terminals, but due to subjective and objective reasons such as limited processing capabilities of SNS and the complex and changeable learning environment, learners' Interest in models like learning is not persistent. With the development of communication technology, some problems will be solved, but how to stimulate and maintain students' interest in mobile learning and how to strengthen cooperative vocabulary learning need to continue to explore.

REFERENCES

- Adams, R. (2007). Do second language learners benefit from interacting with each other? In A. Mackey (Ed.), *Conversational interaction in second language acquisition* (pp. 29–51). Oxford: Oxford University Press.
- Alderson, J. C. (2005). *Diagnosing foreign language proficiency*. London: Continuum.
- Albrechtsen, D., & Haastrup, K., & Henriksen, B. (2008). *Vocabulary and writing in a first and second language: Process and development*. Basingstoke: Palgrave, Macmillan.
- Ally, M. (2009). (Ed.). *Mobile learning: Transforming the delivery of education & training*. Athabasca: AU Press.
- Ana, F. D. (2014). Vocabulary learning in collaborative tasks: A comparison of pair and small group work. *Language Teaching Research*, 18(4), 497-520.
- Bai, Y. M. (2008). Research on the teaching methods of English vocabulary in senior middle school under the new curriculum standard. [D].
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Baralt, M. (2011). The use of social networking sites for language practice and learning. Retrieved May 22, 2012, from <http://www.ilhadodesterro.ufsc.br/pdf/60/baralt60.pdf>
- Blattner, G., & Fiori, M. (2009). Facebook in the language classroom: promises and possibilities. *International Journal of Instructional Technology and Distance Learning*, 16(1), 17-28.
- Boyd, D. M., & Ellison, N. B. (2007). Social Network Sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, 13(1), 210-230.
- Boyd, D. M., & Ellison, N. B. (2008). Social Network Sites: Definition, history, and scholarship. *Journal of Computer Mediated Communication*, 13,

210-230.

- Brick, B. (2011). Social Networking Sites and Language Learning. *International Journal of Virtual and Personal Learning Environments*, 2(3), 18-31.
- Brown, C., & Payne, M. E. (1994). "Five Essential Steps of Processes in Vocabulary Learning". Paper presented at the TESOL Convention, Baltimore, Md.
- Brown, F. A. (2008). Collaborative learning in the EAP classroom: Students' perception. *ESP World*, 17, 1-18.
- Carter, R. (2001). Vocabulary. In Carter, R. & Numan, D. (Eds.), *Teaching English to speakers of other language*. 42-47. Cambridge: Cambridge University Press.
- Chen, N.S., Hsieh, S.W., & Kinshuk. (2008). Effects of short-term memory and content representation type on mobile language learning. *Language Learning & Technology*, 12(3), 93-113.
- Chen, Y. S., Kao, T. C., Sheu, J. P., & Chiang, C. Y. (2002). "A Mobile Scaffolding-Aid-Based Bird-Watching Learning System", Proceedings IEEE. *International Workshop on Wireless and Mobile Technologies in Education*, 2, 15-22.
- Chien, C. W. (2015). Analysis the effectiveness of three online vocabulary flashcard websites on L2 learners' level of lexical knowledge. *English Language Teaching*, 8(5), 111-121.
- Cho, Seikyung. (2011). Social networking sites and foreign language learning. *Multimedia-Assisted Language Learning*, 14(3), 315-334.
- Clark, C., & Gruba, P. (2010). The Use of Social Networking Sites for Foreign Language Learning: An Autoethnographic Study of Livemocha.
- Coady, J. (1997). L2 vocabulary acquisition through extensive reading[A]. J. Coady & T. Huckin (Eds.), *Second Language Vocabulary Acquisition* [C]. Cambridge: Cambridge University Press, 225-237.

- Coady, J., & Huckin, T. (eds.) (1997). *Second language vocabulary acquisition: A rationale for pedagogy*. United Kingdom: Cambridge University Press.
- Collins, A., Brown, J. S., & Newman, S. E. (1989). Cognitive apprenticeship: Teaching the crafts of reading, writing, and arithmetic. In L. B. Resnick (Ed.), *Knowing, learning and instruction: Essays in the honor of Robert Glaser* (pp. 453-494). Hillsdale, NJ: Erlbaum.
- Craik, F. I. M., & Lockhart, R. S. (1972). Levels of processing: A framework for memory research. *Journal of Experimental Psychology*, *104*(3), 268-294.
- Creswell, J. W. (2012). *Qualitative Inquiry and Research Design: Choosing among Five Approaches*. Thousand Oaks, CA: Sage.
- Crompton, H., & Burke, D. (2018). The use of mobile learning in higher education: A systematic review. *Computers and Education*, *123*, 53-64.
- Crook, C. (1994). *Computers and the collaborative experience of learning*. London: Routledge.
- Dalmi, R., & Albion, P. (2014). A review of integrating mobile phones for language learning. Paper presented at the 10th International Conference on Mobile Learning, Madrid, Spain.
- Davis, L. L. (1992). Instrument review: Getting the most from a panel of experts. *Applied Nursing Research*, *5*(4), 194-197.
- DeCarrico, J. (2001). Vocabulary learning and teaching. In M. Celce-Murcia (Ed.), *Teaching English as a second or foreign language*, (285-299). (3rd Ed.). Boston: Heinle & Heinle Publishers.
- de Hei, M. S. A., & Admiraal, W. F., & Sjoer, E., & Strijbos, J. W. (2018). Group learning activities and perceived learning outcomes. *Studies in Higher Education*, *43*, 2354-2370.
- de Hei, M. S. A., & Strijbos, J. W., & Sjoer, E., & Admiraal, W. F. (2016). Thematic review of approaches to design group learning activities in higher education: The development of a comprehensive framework.

Educational Research Review, 18, 33-45.

- De la, & Fuente, M. (2002). Negotiation and oral acquisition of L2 vocabulary: The roles of input and output in receptive and productive acquisition of words. *Studies in Second Language Acquisition*, 24, 81–112.
- Dillenbourg, P., Baker, M., Blaye, A., & O'malley, C. (1996). The evolution of research on collaborative learning. In E. Spada & P. Reiman (Eds.), *Learning in humans and machine: Towards an interdisciplinary learning science* (pp. 189-211). Oxford: Elsevier.
- Dillenbourg, P. (1999). Introduction: what do you mean by “collaborative learning”? In P. Dillenbourg (Ed.), *Collaborative learning. Cognitive and computational approaches* (pp. 1-19) Amsterdam: Pergamon
- Ding, L. (2017). A study of teaching and learning to improve senior high school students' ability of English vocabulary use. Unpublished master's thesis, East China Normal University, Shanghai, China.
- Donato, R. (1994). Collective scaffolding in second language learning. In J.P. Lantolf & G. Appel (Eds.), *Vygotskian approaches to second language research* (pp. 33–56). Norwood, NJ: Ablex.
- Elley, W. B. (1991). Acquiring literacy in a second language: the effect of book-based programs. *Language Learning*, 41(3), 375-411.
- Ellis, R., & He, X. (1999). The roles of modified input and output in the incidental acquisition of word meanings. *Studies in Second Language Acquisition*, 21, 285–301.
- Ellis, R., Tanaka, Y., & Yamazaki, A. (1994). Classroom interaction, comprehension, and L2 vocabulary acquisition. *Language Learning*, 44, 449–491.
- Ericsson, K. A., & Charness, N. (1994). Expert performance: Its structure and acquisition. *American Psychologist*, 49(8), 725-474.
- Finocchiaro, M., & Brumfit, C. (1983). The Functional notional approach: From

- theory to practice. New York, NY: Oxford University Press.
- Gass, S., & Alvarez. T. M. J. (2005). Attention when? An investigation of the ordering effect of input and interaction. *Studies in Second Language Acquisition*, 27, 1-31.
- Gayoung Lee. (2018). Effects of using SNS applications incorporating visual aids on Korean high school students' English vocabulary, affective aspects, and mobile learning style. *Journal of Language Sciences* 25(3), 157-189.
- Godwin, J. R. (2006). Emerging technologies: Teg clouds in the Blogosphere: Electric literacy and social networking. *Language Learning and Technology*, 10(2), 8-15.
- Gillbert, N. J., & Driscoll, M. P. (2003). Collaborative knowledge building: A case study. *Educational Technology Research and Development*, 50(1), 59-79.
- Hamalainen, R., & Vahasantanen, K. (2011). Theoretical and pedagogical perspectives on orchestrating creativity and collaborative learning. *Educational Research Review*, 6(3), 169-184.
- Harrison, R., & Thomas, M. (2009). Identity in online communities: social networking sites and language learning. *International Journal of Emerging Technologies & Society*, 7(2), 109-124.
- Hasegawa, T., M. K., & Ban. H. (2015). An English vocabulary learning support system for the learner's sustainable motivation. *Springer Plus* 4(1), 99.
- Henri, F., & Rigault, C. (1996). Collaborative distance education and computer conferencing. In Liao, T. T. (Ed.), *Advanced educational technology: Research issues and future potential* (pp. 45-76). Berlin: Springer.
- Hesse, F., Care, E., Buder, J., Sassenberg, K., & Griffin, P. (2015). A framework for teachable collaborative problem solving skills. In P. Griffin & E. Care (Eds.), *Assessment and teaching of 21st century skills, educational assessment in an information age* (pp. 37-56.). NY: Springer.

- Hsu, Y., & Ching, Y. (2013). Mobile computer-supported collaborative learning: A review of experimental research. *British Journal of Educational Technology, 44*(5), 111-114.
- Hulstijn, J. H.(1992). Retention of inferred and given word meaning: Experiments in incidental vocabulary learning. In P. J. L. Arnaud & H. Bejoint (Eds.), *vocabulary and applied linguistics* (pp.113-125). London: Macmillan.
- Hulstijn, J., & Laufer, B. (2001). Some empirical evidence for the involvement load hypothesis in vocabulary acquisition. *Language Learning, 51*(3), 539-558.
- Jeong, H., & Hmelo-Silver, C. E. (2016). Seven affordances of Computer Supported Collaborative Learning: How to support collaborative learning? How can technologies help? *Educational Psychologist, 51*(2), 247-265.
- Jeremy, H. (2010). *The practice of English language teaching*. Harlow: Pearson Longman.
- Jin, Seunghee. (2018). The effects of using smartphone applications for vocabulary flashcards and SNS-based mobile collaborative learning on English vocabulary knowledge. *Multimedia-Assisted Language Learning, 21* (4), 298-322.
- Johnson, D. W., & Johnson, R. T. (2004). Cooperation and the use of technology. In D. Jonassen (Ed.), *Handbook of research on educational communications and technology* (pp. 785-811). Mahwah, NJ: Lawrence Erlbaum.
- Joo. Y. J., & Jung.Y. J (2016). A study of satisfaction and intention to use social media for collaborative learning in University. *Korean Journal of Educational Research, 54* (1), 127-150.
- Joo, Y. J., Chung, A. K., Kang, J. J., & K. Y. Go. (2015). Identification of the predictability of SNS intention to use and related variables in

- collaborative learning. *The Journal of The Institute of Internet, Broadcasting and Communication*, 15(3), 191-199.
- Kang, D. H. (2003). The relationship between vocabulary learning and motivation in Korean primary school EFL classroom. *English Teaching*, 58(2), 119-141.
- Kennedy, C., & Levy, M. (2008). L'italiano al telefonino: Using SMS to support beginners's language learning. *ReCALL*, 20 (3), 315-330.
- Kim, D., Rueckert, D., Kim, D. J., & Seo, D. (2013). Students' perceptions and experiences of mobile learning. *Language Learning & Technology*, 17 (3), 52-73.
- Kim, M. & Hannafin, M. (2011). Scaffolding problem solving in technology enhanced learning environments (TELEs): Bridging research and theory with practice. *Computers and Education*, 56, 403-417.
- Kim, Y. (2008). The contribution of collaborative and individual tasks to the acquisition of L2 vocabulary. *The Modern Language Journal*, 92, 114-130.
- Kollar, I., Fischer, F., & Slotta, J. D. (2005). Internal and external collaboration scripts in web based science learning at schools. In Koschmann, T., Suthers, D., & Chan, T. W. (Eds.), *Computer Supported Collaborative Learning* (pp. 331-340). NJ: Lawrence Erlbaum, Mahwah.
- Koriji, T., Ogawa, Y., & Watanabe, T. (2001) "Agent-oriented Supported Environment in Web-based Collaborative Learning". *Journal of Universal Computer Science*, 7 (3), 226-239.
- Kukulska-Hulme, A. (2009). Will mobile learning change language learning? *ReCALL*, 21 (2), 157-165.
- Kukulska-Hulme, A., & Traxler, J. (2005). (Eds.). *Mobile learning: A handbook for educators and trainers*. London: Routledge.
- Laal, M. (2013). Collaborative learning; elements. *Social and Behavioral Sciences*, 83, 814-818.

- Laufer, B. (1992). How much lexis is necessary for reading comprehension? In P.J.L. Arnaud and H. Béjoint (Eds), *Vocabulary and Applied Linguistics* (pp. 126-132). London: Macmillan.
- Laufer, B., & Goldstein, Z. (2004). Testing vocabulary knowledge: Size, strength, and computer adaptiveness. *Language Learning*, 54 (3), 399-436.
- Laurillard, D. (2009). The pedagogical challenges to collaborative technologies. *International Journal of Computer-Supported Collaborative Learning*, 4(1), 5–20.
- Lee, H. J. (1996). An analysis of corpus-based research on TEFL and applied linguistics. *English Teaching*, 62 (2), 283-306.
- Lewis, M. (1993). *The Lexical Approach: The State of ELT and the Way Forward*. Hove: English Language Teaching Publications.
- Lim, K. (2010). A case study on a learning with social network services on smartphones: Communication contents and characteristics analyses of the applications. *The Korean Journal of Educational Methodology Studies*, 22 (4), 43-66.
- Long, M. H. (1983). Native speaker/non-native speaker conversation and the negotiation of comprehensible input. *Applied Linguistics* 4(2), 126-41.
- Long, M. H. (1996). The role of the linguistic environment in second language acquisition. In Ritchie, W. C., & Bahtia, T. K. (Eds.), *Handbook of second language acquisition* New York: Academic Press.
- Lu, M. (2008). Effectiveness of vocabulary learning via mobile phone. *Journal of Computer Assisted Learning*, 24 (6), 515-525.
- Lund, J. A. (1991). Comparison of second language listening and reading comprehension. *The Modern Language Journal*, 75(2), 196-204.
- Lv, C. G. (2004). The relationship between vocabulary and language comprehensive ability and vocabulary depth knowledge. *Foreign Language Teaching and Research*, 2, 116-123.

- Nagy, W., Herman, P., & Anderson, R. (1985). Learning words from context. *Reading Research Quarterly, 20*(2), 101-113.
- Nation & Waring. (1997). Vocabulary size, text coverage and word list. In Schmitt, N. & McCarthy, M. (Eds.): *Vocabulary: description, acquisition and pedagogy* (pp. 6-19). Cambridge: Cambridge University Press.
- Nation, I. S. P. (2001). *Learning vocabulary in another language*. UK: Cambridge University Press.
- Newton, J. (1993). Task-based interaction among adult learners of English and its role in second language development. Unpublished PhD dissertation, Victoria University of Wellington, New Zealand.
- Ohta, A. S. (2001). Second language acquisition processes in the classroom: Learning Japanese. Mahwah, NJ: Lawrence Erlbaum.
- Panitz, T. (1999). *Collaborative versus cooperative Learning: A comparison of the two concepts which will help us understand the underlying nature of interactive learning*.
- Rha, I. J., & Chung, H. M. (2001). Developing an Action Model for WBI Design. *Educational Technology Research, 17* (2), 27-52.
- Richey, R. C., Klein, J. D. (2014). Design and development research : methods, strategies, and issues. London : Routledge.
- Roschelle, J., & Teasley, S. (1995). The construction of shared knowledge in collaborative problem-solving. In C. E. O'Malley (Ed.), *Computer-supported collaborative learning* (pp.69-97). Berlin: Springer.
- Rubio, D. M., Berg-Weger, M., Tebb, S. S., Lee, E. S., & Rauch, S. (2003). Objectifying content validity: Conducting a content validity study in social work research. *Social Work Research, 27*(2), 94-104.
- Salomon, G., & Globerson, T. (1989). When teams do not function the way they ought to. *International Journal of Educational Research, 13*, 89-99.
- Scardamalia, M. (2002). Collective cognitive responsibility for the advancement

- of knowledge. In B. Smith (Ed.), *Liberal education in a knowledge society* (pp. 67-98). Illinois: Carus Publishing Company.
- Schmitt, N. & McCarthy, M. (2002). *Vocabulary: Description, Acquisition and Pedagogy*. London: Cambridge University Press.
- Schrage, M. (1990). *Shared minds: The new technologies of collaboration*. New York: Random House
- Sinclair, J. M. & Renouf. A. (1988). A lexical syllabus for language learning. In Carter R. and McCarthy M. (Eds.) *Vocabulary and language teaching*. London: Longman.
- Song, Y. (2008). SMS enhanced vocabulary learning for mobile audiences. *International Journal of Mobile Learning and Organization*, 2(1), 81-98.
- Stahl, G., Koschmann, T., & Suthers, D. (2006). Computer-supported collaborative learning: An historical perspective. In R. K. Sawyer (Ed.), *Cambridge handbook of the learning sciences*, (pp. 409–426). Cambridge: Cambridge University Press.
- Stepp-Greany, J. (2002). Student perceptions on language learning in a technological environment: Implications for the new millennium. *Learning & Technology*, 6 (1), 165-180.
- Storch, N. (1999). Are two heads better than one? Pair work and grammatical accuracy. *System*, 27, 363–374.
- Storch, N. (2005). Collaborative writing: Product, process and students' reflections. *Journal of Second Language Writing*, 14, 153–173.
- Storch, N., & Wigglesworth, G. (2007). Writing tasks: Comparing individual and collaborative writing. In M.P. García Mayo (Ed.), *Investigating tasks in formal language learning* (pp. 157–177). London: Multilingual Matters.
- Swain, M. (1995). Three functions of output in second language learning. In Cook, G., & Seidlhofer, B(Ed.), *Principle and practice in applied linguistics: Studies in honor of H. G. Widdowson*. Oxford: Oxford University Press.

- Swain, M. (2000). The output hypothesis and beyond: Mediating acquisition through collaborative dialogue. *Sociocultural theory and second language learning*, 97, 114.
- Swain, M. (2001a). Integrating language and content teaching through collaborative tasks. *Canadian Modern Language Review*, 58, 44-63.
- Srinivas, H. (2011). *What is collaborative learning? The global development research center*, Kobe; Japan.
- Tang, C. L. (2018). The applied research in English vocabulary teaching based on cooperative learning, Unpublished master's thesis, Central China Normal University, Wuhan, China.
- Thornbury, S. (2011). *How to teach vocabulary*. Beijing: Posts & Telecom Press.
- Thornton, P., & Houser, C. (2005). Using mobile phones in English education in Japan. *Journal of Computer Assisted Learning*, 21, 217-228.
- Tomcho, T. J., & Foels, R. (2012). Meta-analysis of group learning activities: Empirically based teaching recommendations. *Teaching of Psychology*, 39(3), 159–169.
- Vygotsky, L. (1962). *Thought and language*. Massachusetts: MIT Press.
- Vygotsky, L. S. (1978). *Mind in society: the development of higher psychological processes*, Cambridge: Harvard University Press.
- Warschauer, M. (1996). Comparing face-to-face and electronic discussion in the second language classroom. *CALICO Journal*, 13(2), 7-26.
- Warschauer, M. (1997). Computer-Mediated collaborative learning: Theory and practice. *The Modern Language Journal*, 81(4), 470-481.
- Wigglesworth, G., & Storch, N. (2009). Pair versus individual writing: Effects on fluency, complexity and accuracy. *Language Testing*, 26, 445–466.
- Wilkins, D. A. (1972). *Linguistics in language teaching*. London: Edward Arnold.
- Wodzicki, K., Schwammlein, E., & Moskaliuk, J. (2012). “Actually, I wanted to

learn”: Study-related knowledge exchange on social networking sites.
Internet and Higher Education, 15 (1), 9-14

Wu, T. T. (2018). Improving the Effectiveness of English Vocabulary Review by Integrating ARCS with Mobile Game-Based Learning. *Journal of Computer Assisted Learning*, 34 (3), 315-323.

Yoo, H. J. (2014). The effect of collaborative learning through mobile SNS on learning English grammar. *Studies in Foreign Language Education*, 28(2). 135-158.

Zhang, D., & Mu, A. (2003). Use of online chat in a webct-enhanced elementary Chinese language class. Paper presented at the the World Conference on E-Learning in Corp., Govt., Health., & Higher Ed., Phoenix, AZ.

Zhang, H., Song, W., & Burston, J. (2011). Reexamining the effectiveness of vocabulary learning via mobile phones. *TOJECT: Turkish Online Journal of Educational Technology*, 10 (3), 203-214.

Zhang, X. M., & Zhang, X. H. (2011). Research on mobile learning model of college English vocabulary based on mobile phone. *The Chinese Journal of ICT in Education*, 18, 23-26.

APPENDIXES

Appendix 1 The First Expert Evaluation for the Instructional Strategies

Appendix 2 The Second Expert Evaluation for the Instructional Strategies

Appendix 3 Questionnaire for Learners' Response

Appendix 4 Questionnaire Result for Learners' Response

Appendix 5 Interview Outline for the Instructor

Appendix 6 Interview Outline for Learners

Appendix 7 The Final Instructional Strategies

Appendix 1

The First Expert Evaluation for Vocabulary Learning on SNS supported Collaborative Learning Environment

Hello, I am YANG WANPING and a master' s student in Educational Technology, Seoul National University. I am conducting a research on developing instructional strategies for vocabulary learning. The specific purpose of this study is to develop instructional strategies that promotes classroom vocabulary learning in a collaborative environment supported by SNS. The questionnaire is designed to assess the feasibility of instructional strategies and specific guidance. The survey has two main purposes. First, it aims to conduct a feasibility analysis of the instructional strategies and detailed guidance for promoting vocabulary learning in a collaborative environment based on SNS support derived from previous research analysis. Secondly, revisions and additional comments are given for this strategy and detailed guidance.

I sincerely appreciate you for giving your precious time and effort for this study.

YANG WANPING

Seoul National University,

Department of Education,

Educational Technology Major

First, please enter your demographic information:

Name	Occupation	Major	Experience (in years)	Final Education

(* We promise your personal information will be kept confidential.)

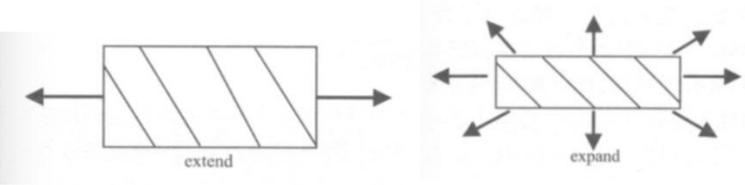
Then evaluate the following instructional strategies to promote vocabulary learning in a collaborative learning environment based on WeChat SNS support, and mark them in applicable places (V).

(1) Overall evaluation of instructional strategies

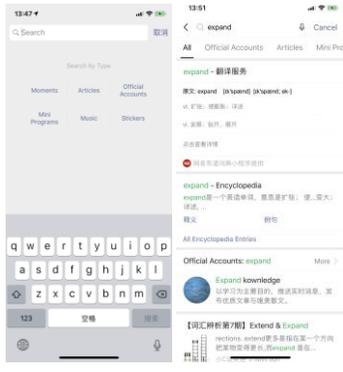
Item	Content	Quiet disagree (1 point)	Disagree (2 point)	Agree (3 point)	Quiet agree (4 point)
Feasibility	The strategy is appropriate to consider in facilitating vocabulary learning in SNS supported collaborative learning environment.	①	②	③	④
Explanatory	This strategy illustrates the strategies that should be considered in facilitating vocabulary learning in SNS supported collaborative learning environment.	①	②	③	④
Usability	The strategy can be useful in facilitating vocabulary learning in SNS supported collaborative learning	①	②	③	④

	environment.				
University	The strategy can be used universally in facilitating vocabulary learning in SNS supported collaborative learning environment.	①	②	③	④
Understanding	This support strategy makes it easier to understand the strategies that should be considered in facilitating vocabulary learning in SNS supported collaborative learning environment.	①	②	③	④

(2) Evaluation of specific instructional strategies and detailed guidelines

Item	Standard			
Specific instructional strategies and detailed guidelines	Quiet disagree (1 point)	Disagree (2 point)	Agree (3 point)	Quiet agree (4 point)
1. The mobile vocabulary explanation resource database is established, and the vocabulary is explained in multi-modal form.				
<p>1.1 The application of graphics, text, sound and image in the form of multi-modal vocabulary explanation to reduce the burden of memory.</p> <p>Ex: The graphic explains the meaning of the vocabulary more clearly.</p> 	①	②	③	④

<p>1.2 Provide pre-class preview materials to stimulate previous knowledge structure</p> <p>Ex: Instructors use the 'Note' function of WeChat to make mobile electronic vocabulary resources (including vocabulary sound, shape, meaning)</p>  <p>The screenshot shows a WeChat note interface. At the top, it says 'Note' with a back arrow and a three-dot menu. Below that, it says 'from_jessica李静' and '群聊中 - 英语10-班... 2019-03-25'. The main text of the note is '弱读作业示范 📢📢📢 建议收藏起来方便回听哦~'. Below the text is a blue header 'The cows eat the grass' with a speaker icon and a play button. Underneath is a progress bar for an audio player, showing '00:00' and '00:51'. At the bottom, there are two green star icons with text: '单词发音: 1. cows的音标是 ['kəʊz], 注意[əʊ]是双元音, 要有嘴型的变化, 这里的复数s读[z] 2. grass, 美音[græs], 英音[grɑ:s], 两种都可以' and '技巧使用: 句首的the可以不弱读, eat的[t]失爆'.</p>	①	②	③	④
2. Provide a collaborative learning guidelines based on WeChat SNS				
<p>2.1 WeChat is used for learning in detail, and the preparation time of practice is given, and the corresponding help is provided according to its level of use.</p>	①	②	③	④

2.2 Provide guidelines for collaborative learning using WeChat, identify grouping, learning goals, etc.	①	②	③	④
3. Provide support tools to meet the learning needs of query, communication, and sharing				
3.1 Realize online resource sharing so that learning materials can be accessed anytime, anywhere	①	②	③	④
<p>3.2 Fast online access to external learning resources</p> <p>Ex: using the 'search' function of WeChat</p> 	①	②	③	④

4. Improve vocabulary use ability in the cultivation of listening and speaking skills				
4.1 Organize repeated listening training to familiarize learner-self with vocabulary Ex: Instructors record a large number of listening training materials for students' listening training.	①	②	③	④
4.2 Provide opportunities for oral exercises to activate stored language elements so that they can use words and phrases fluently and become spontaneous language users in unconscious situations	①	②	③	④
5. Improve vocabulary application ability in the cultivation of reading and writing skills				
5.1 To arrange a paragraph reading task, to continuously reproduce the new vocabulary as well as repeat the memory, and grasp both the meaning and sense of the sentence, being familiar with the sentence structure, achieving the purpose of learning in order to practice	①	②	③	④
5.2 Create context, give the subject of writing, put forward the requirement of the application of the vocabulary, and combine the new knowledge with the old knowledge	①	②	③	④

6. Assign collaborative tasks that can activate learners' advanced processing to enhance the long-term retention of the vocabulary knowledge				
6.1 Cultivate the ability to understand and use vocabulary in the process of communication and the fusion of new and old knowledge.	①	②	③	④
6.2 Create context and situation suitable for vocabulary, provide learners the opportunities to use vocabulary	①	②	③	④
6.3 Encourage learners to have a higher level of classroom participation and interaction				
6.4 Create opportunities for interaction between group members, interaction between groups, and joint construction of new vocabulary knowledge Ex: Using WeChat to collaboration to complete the 'vocabulary' task	①	②	③	④
7. Provide multi-perspective and multi-dimensional evaluation criteria and evaluation methods				
7.1 Objective evaluation of the sound, form and meaning of vocabulary in	①	②	③	④

order to master its learning degree Ex: Carry out in the form of test questions.				
7.2 Provide criteria for instructor-evaluation, peer mutual evaluation and self-evaluation.	①	②	③	④
7.3 Pay more attention to the evaluation of the learners' learning process, and increase the proportion of the influence of the process evaluation results on the final evaluation.	①	②	③	④
7.4 Share the results of each group online for mutual evaluation between groups Ex: Using WeChat's SNS chat group function or 'Moment' function, sharing learning results.	①	②	③	④

Appendix 2

The Second Expert Evaluation for vocabulary learning on SNS supported collaborative learning environment

Hello, I am YANG WANPING and a master' s learner in Educational Technology, Seoul National University. I am conducting a research on developing instructional strategies for vocabulary learning. The specific purpose of this study is to develop instructional strategies that promotes classroom vocabulary learning in a collaborative environment supported by SNS. The questionnaire is designed to assess the feasibility of teaching strategies and specific guidance. The survey has two main purposes. First, we will conduct a feasibility analysis of the instructional strategies and detailed guidance for promoting vocabulary learning in a collaborative environment based on SNS support derived from previous research analysis. Secondly, revisions and additional comments are given for this strategy and detailed guidance.

I sincerely appreciate you for giving your precious time and effort for this study.

YANG WANPING

Seoul National University,

Department of Education,

Educational Technology Major

First, please enter your demographic information:

Name	Occupation	Major	Experience (in years)	Final Education

(* We promise your personal information will be kept confidential.)

Then evaluate the following instructional strategies to promote vocabulary learning in a collaborative learning environment based on WeChat SNS support, and mark them in applicable places (V).

(1) Overall evaluation of instructional strategies

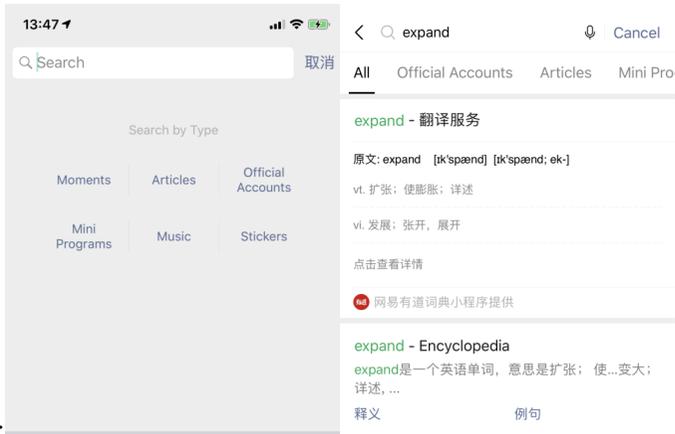
Item	Content	Totally disagree (1 point)	Disagree (2 point)	Agree (3 point)	Totally agree (4 point)
Feasibility	The strategy is appropriate to consider in facilitating vocabulary learning in SNS supported collaborative learning environment.	①	②	③	④
Explanatory	This strategy illustrates the strategies that should be considered in facilitating vocabulary learning in SNS supported collaborative learning environment.	①	②	③	④
Usability	The strategy can be useful in facilitating vocabulary	①	②	③	④

	learning in SNS supported collaborative learning environment.				
University	The strategy can be used universally in facilitating vocabulary learning in SNS supported collaborative learning environment.	①	②	③	④
Understanding	This support strategy makes it easier to understand the strategies that should be considered in facilitating vocabulary learning in SNS supported collaborative learning environment.	①	②	③	④

(2) Evaluation of specific instructional strategies and detailed guidelines

Stage	Item	Standard			
	Specific instructional strategies and detailed guidelines	Totally disagree (1 point)	Disagree (2 point)	Agree (3 point)	Totally agree (4 point)
Pre-class preparation stage	1. Independently establish mobile vocabulary explanation resource database to illustrate vocabulary in multi-modal form	①	②	③	④
	1.1 Apply the ‘Note’ function in WeChat to present vocabulary explanations in the form of multi-modality such as textual interpretation, pronunciation, related pictures or videos.  Ex: 句首的the可以不弱读，eat的[t]失爆	①	②	③	④

1.2 Deliver the content in the vocabulary explanation resource to learners through the ‘group chatting room’ function of WeChat before and after class, so that it is easy to review, preview at any time.	①	②	③	④
2. Provide instructions to direct learners to conduct SNS supported collaborative learning through WeChat to ensure the correct use of learning tools and the effective completion of collaborative tasks	①	②	③	④
2.1 Send the operation instruction of WeChat as a specific learning tool in the chatting room and urge learners to be familiar with the operation before class.	①	②	③	④
2.2 Communicate with learners in chatting room to formulate the group constellation during collaborative learning; set learning objectives with the desired interaction; clarify assessment content and assessment criteria.	①	②	③	④
3. Check the stability of the classroom network environment and the situation of learning tools in advance to ensure the favorable implement of instruction	①	②	③	④
3.1 Check the stability of Wi-Fi in the classroom to make sure a smooth network during the course.	①	②	③	④

	3.2 Supervise each learner to carry a mobile electronic device that downloads WeChat Application and can open 4G network, add WeChat accounts for class members and instructors, and join each group as needed.	①	②	③	④
	4. Flexible use of the WeChat 'search', 'communication', 'sharing' these three functions to meet the various needs of the collaborative learning process	①	②	③	④
Vocabulary enhancement stage in SNS supported collaborative learning environment	<p>4.1 Utilize 'search' function to enable fast online access to external learning resources to assist in the completion of collaborative tasks.</p> <p>Ex:</p> 	①	②	③	④

4.2 The ‘private chat’ and ‘group chat’ features offer a platform for multi-directional communication, where instructors can communicate with learners and provide timely support, while encouraging learners discussing learning content in groups.	①	②	③	④
4.3 Group members, group-group, instructor-learner share learning resources in the form of files or chats in the group chatting room at any time.	①	②	③	④
5. Guide each group to conduct repeated listening and speaking training, mutual supervision, and achieve common progress	①	②	③	④
5.1 The ‘voice’ function in WeChat provides the opportunity to listen and speak repeatedly to master the pronunciation of vocabulary.	①	②	③	④
5.2 Conduct collaborative tasks with listening and speaking as the core in various forms, activate stored vocabulary elements, and become spontaneous vocabulary users.	①	②	③	④
6. Integrate vocabulary into reading and writing tasks, and achieve the purpose of learning with the combination of group collaboration and personal tasks.	①	②	③	④

<p>6.1 Through personal reading and group discussion, understand the meaning and meaning of the vocabulary in the paragraph, and use it flexibly.</p>	①	②	③	④
<p>6.2 Create situational role-playing, assign paragraph writing tasks within each group to complete the contextual dialogue under the rules.</p>	①	②	③	④
<p>7. Motivate learners' motivation for learning and collaboration to increase participation in learning with a positive attitude for enhancing long-term retention of vocabulary knowledge</p>	①	②	③	④
<p>7.1 Implement incentives and monitoring mechanisms to sustain learning motivation.</p> <p>Ex: </p>	①	②	③	④

	7.2 Set up collaborative tasks for group-group competition to drive collaboration motivation, share responsibility and solve problems.	①	②	③	④
	7.3 Enrich learning materials to assist instruction and enhance learning interest and enthusiasm in the integration of new and old knowledge	①	②	③	④
	7.4 Observe the collaborative learning process of each group at any time in the group chatting room, give guidance and provide supplementary materials when necessary	①	②	③	④
	8. Provide multi-perspective and multi-dimensional assessment criteria and evaluation methods	①	②	③	④
Evaluation and feedback stage	8.1 Send the question cards in the group chatting room to answer to objectively evaluate the mastery of vocabulary use.  <p>Ex:</p>	①	②	③	④

8.2 Set evaluation criteria for all collaborative learning outcomes, and calculate the evaluation results into the final grade	①	②	③	④
8.3 Pay more attention to the evaluation of the learners' learning process, and increase the proportion of the influence of the process evaluation results on the final evaluation.	①	②	③	④
8.4 Develop an evaluation scale for instructor assessment, peer assessment under this context.	①	②	③	④

Appendix 3 Questionnaire for Learners' Response

The following is a survey on the overall satisfaction of vocabulary learning promotion effects of SNS supported collaborative learning						
	Statements	Strongly disagree	Disagree	general	agree	Totally agree
1	Collaborative learning based on WeChat SNS is very helpful for vocabulary learning	①	②	③	④	⑤
2	Vocabulary learning in the form of SNS supported collaborative learning is interesting	①	②	③	④	⑤
3	Vocabulary learning in the form of SNS supported collaborative learning is very convenient	①	②	③	④	⑤
4	We can learn the formal English vocabulary from collaborative learning using WeChat SNS	①	②	③	④	⑤
5	We can learn new knowledge in addition to textbook content through SNS supported collaborative	①	②	③	④	⑤

	learning					
6	SNS supported collaborative learning can stimulate learning motivation	①	②	③	④	⑤
7	The SNS supported collaborative learning can promote vocabulary learning compare to the traditional classroom model	①	②	③	④	⑤
8	SNS supported collaborative learning has a positive effect on vocabulary usage	①	②	③	④	⑤
9	Through group activities can achieve better learning objectives	①	②	③	④	⑤
10	Through group activities can learn more things compare to study on your own	①	②	③	④	⑤
11	The supervision of the group leader can improve subjective initiative in learning	①	②	③	④	⑤
12	Our team members are actively involved and have	①	②	③	④	⑤

	completed the final task well					
13	Various functions in WeChat SNS can effectively assist group activities	①	②	③	④	⑤
The following items are surveys on the promotion of vocabulary learning by SNS supported collaborative learning						
	Statements	①	②	③	④	⑤
1	Receiving and previewing a list of key words in the WeChat group before the class will greatly help the vocabulary learning	①	②	③	④	⑤
2	Discuss more difficult vocabulary in groups can gain a deeper understanding of vocabulary	①	②	③	④	⑤
3	The instruction manual provided by the teacher before the class (including WeChat instructions and evaluation criteria) is very helpful for the development of the activity	①	②	③	④	⑤
4	The three functions of search, communication and	①	②	③	④	⑤

	sharing in WeChat SNS are very helpful for the development of vocabulary learning					
5	Repeated listening and speaking training by using WeChat SNS with group members can greatly help vocabulary learning	①	②	③	④	⑤
6	Integrating vocabulary into reading and collaborative tasks can understand the meaning and use of vocabulary better	①	②	③	④	⑤
7	The implementation of reward and supervision mechanisms can promote classroom participation	①	②	③	④	⑤
8	The setting of competitive tasks is very helpful for actively engaging in vocabulary learning	①	②	③	④	⑤
9	Extracurricular media materials are very helpful for extended learning of vocabulary	①	②	③	④	⑤
10	It is very helpful for vocabulary learning when	①	②	③	④	⑤

	teachers can check the discussion content in the group at any time and give guidance in time					
11	Collaborative learning tasks provide more opportunities for vocabulary usage	①	②	③	④	⑤
12	Evaluation of processes can promote vocabulary learning	①	②	③	④	⑤
13	Setting evaluation criteria for task output can promote the correct usage of vocabulary	①	②	③	④	⑤
14	Teacher evaluation, and the development of peer evaluation scales in the group can stimulate learning initiative	①	②	③	④	⑤

Appendix 4 Questionnaire Result for Learners' Response

The following is a survey on the overall satisfaction of vocabulary learning promotion effects of SNS supported collaborative learning			
Number	Statements	M	SD
1	Collaborative learning based on WeChat SNS is very helpful for vocabulary learning	3.63	0.64
2	Vocabulary learning in the form of SNS supported collaborative learning is interesting	3.82	0.57
3	Vocabulary learning in the form of SNS supported collaborative learning is very convenient	3.73	0.62
4	We can learn the formal English vocabulary from collaborative learning using WeChat SNS	3.64	0.77
5	We can learn new knowledge in addition to textbook content through SNS supported collaborative learning	3.55	0.78
6	SNS supported collaborative learning can stimulate learning motivation	3.82	0.72
7	The SNS supported collaborative learning can promote vocabulary learning compare to the traditional classroom model	3.73	0.45
8	SNS supported collaborative learning has a positive effect on vocabulary usage	3.73	0.45
9	Through group activities can achieve better learning objectives	3.55	0.78
10	Through group activities can learn more things	3.82	0.83

	compare to study on your own		
11	The supervision of the group leader can improve subjective initiative in learning	4.09	0.51
12	Our team members are actively involved and have completed the final task well	3.27	0.45
13	Various functions in WeChat SNS can effectively assist group activities	3.82	0.57
The following items are surveys on the promotion of vocabulary learning by SNS supported collaborative learning			
Number	Statements	M	SD
1	Receiving and previewing a list of key words in the WeChat group before the class will greatly help the vocabulary learning	4.00	0.43
2	Discuss more difficult vocabulary in groups can gain a deeper understanding of vocabulary	3.82	0.57
3	The instruction manual provided by the teacher before the class (including WeChat instructions and evaluation criteria) is very helpful for the development of the activity	4.00	0.60
4	The three functions of search, communication and sharing in WeChat SNS are very helpful for the development of vocabulary learning	3.82	0.57
5	Repeated listening and speaking training by using WeChat SNS with group members can greatly help vocabulary learning	3.82	0.72

6	Integrating vocabulary into reading and collaborative tasks can understand the meaning and use of vocabulary better	3.82	0.72
7	The implementation of reward and supervision mechanisms can promote classroom participation	4.27	0.62
8	The setting of competitive tasks is very helpful for actively engaging in vocabulary learning	4.09	0.69
9	Extracurricular media materials are very helpful for extended learning of vocabulary	3.91	0.79
10	It is very helpful for vocabulary learning when teachers can check the discussion content in the group at any time and give guidance in time	3.91	0.28
11	Collaborative learning tasks provide more opportunities for vocabulary usage	3.91	0.51
12	Evaluation of processes can promote vocabulary learning	4.00	0.43
13	Setting evaluation criteria for task output can promote the correct usage of vocabulary	3.82	0.39
14	Teacher evaluation, and the development of peer evaluation scales in the group can stimulate learning initiative	4.00	0.60

Appendix 5 Interview Outline for the Instructor

– About overall instructional strategies

1. Comprehension: Whether the instructional strategies are easy to understand in terms of semantic expression
2. Illustrative: Is the description of the specific guidelines in the instructional strategies illustrative?
3. Usefulness: Does the design strategies promote vocabulary learning?
4. Universality: Are these instructional strategies universal? why?
5. Feasibility: What is the probability that these instructional strategies will be widely used in practical class? Why?

– Overall class satisfaction

1. Compared with the traditional classroom, what are the outstanding advantages of SNS supported collaborative learning?
2. What help do you think SNS supported collaborative learning has to students' vocabulary learning?
3. What is the effect of vocabulary learning in this instructional mode?
4. What are the difficulties in vocabulary learning in these instructional strategies?
5. What improvements do you think are needed?

–About Specific guidelines

1. What specific guidelines do you think are problematic in instructional strategies?
2. What specific guidelines do you find satisfying in instructional strategies?

Appendix 6 Interview Outline for Learners

– About overall lesson

1. Do you think learning activities are interesting? Is there any learning effect?
2. What do you think are the advantages of SNS supported collaborative learning?
3. What do you think are the disadvantages of SNS supported collaborative learning?
4. What learning activities do you think need to be improved?
5. What modification suggestions do you have for this learning activity that needs to be improved?
6. What was your most impressive learning activity during the learning process? Why?
7. What is the most helpful learning activity for your vocabulary learning?
8. How important do you think this combination of SNS supported collaborative learning is to your vocabulary learning?

–About SNS supported collaborative learning

1. Is it convenient for your vocabulary learning?
2. What effect does group work have on your vocabulary learning?

– About Improvement

1. In addition, do you have any suggestions to improve the instructional strategies?

Appendix 7 The Final Instructional Strategies

Stage	General instructional Strategies and Specific Guidelines
<p>Pre-class Preparation stage</p>	<p>1. Establish mobile vocabulary resource to illustrate vocabulary in multi-modal form</p> <p>1.1 Apply the ‘Note’ function in WeChat to present vocabulary explanations in the form of multi-modality such as textual interpretation, pronunciation, related pictures or videos.</p>  <p>Ex:</p>
	<p>1.2 Deliver the content in the vocabulary explanation resource to learners through the ‘group chatting room’ function of WeChat before and after class , so that it is easy to review, preview at any time.</p> <p>2. Provide instructions to direct learners to conduct SNS supported collaborative learning through WeChat to</p>

ensure the correct use of learning tools and the effective completion of collaborative tasks

2.1 Send the operation instruction of WeChat as a specific learning tool in the chatting room and urge learners to be familiar with the operation before class.

2.2 Evaluate learner engagement in advance and determine group composition based on participation; set learning objectives with the desired interaction; clarify assessment content and assessment criteria.

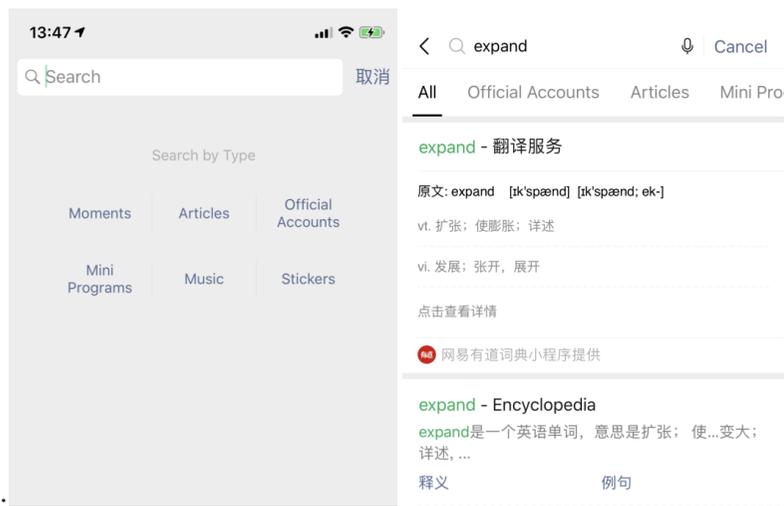
3. Check the stability of the classroom network environment and the situation of learning tools in advance to ensure the favorable implement of instruction

3.1 Check the stability of Wi-Fi in the classroom to make sure a smooth network during the course.

3.2 Supervise each learner to carry a mobile electronic device that downloads WeChat Application and can open 4G network, add WeChat accounts for class members and instructors, and join each group as needed.

4. Flexible use of the WeChat ‘search’ , ‘communication’ , ‘sharing’ these three functions to meet the various needs of the collaborative learning process

4.1 Utilize ‘search’ function to enable fast online access to external learning resources to assist in the completion of collaborative tasks.



Ex:

4.2 The 'private chat' and 'group chat' features offer a platform for multi-directional communication, where instructors can communicate with learners and provide timely support, while encouraging learners discussing learning content in groups.

4.3 Group members, group-group, instructor-learner share learning resources in the form of files or chats in the group chatting room at any time.

Class Activities Stage

5. Guide each group to conduct repeated listening and speaking training, mutual supervision, and achieve common progress

5.1 The 'voice' function in WeChat provides the opportunity for learners to listen and speak repeatedly to master the pronunciation of vocabulary.

5.2 Conduct collaborative tasks with listening and speaking as the core in various forms, activate stored vocabulary elements, and become spontaneous vocabulary users.

6. Integrate vocabulary into reading and writing tasks, and achieve the purpose of learning with the combination of group collaboration and personal tasks.

6.1 Through personal reading followed by group discussion, understand the meaning and meaning of the vocabulary in the paragraph, and use it flexibly.

6.2 Create paragraph writing assignment within each group to complete the contextual dialogue.

7. Facilitate learners' motivation for learning and collaboration to increase participation in learning with a positive attitude for enhancing long-term retention of vocabulary knowledge

7.1 Implement incentives and monitoring mechanisms to sustain learning motivation.



Ex: In addition to motivating learners in the form of public encouragement in groups as shown, the incentive system can also be scored. Count points into final grades.

7.2 Set up collaborative tasks for group-group competition to drive collaboration motivation, share responsibility and solve problems.

7.3 Enrich learning materials to assist instruction and enhance learning interest and enthusiasm in the integration of new and old knowledge

7.4 Observe the collaborative learning process of each group at any time in the group chatting room, give guidance and provide supplementary materials when necessary

8. Provide multi-perspective and multi-dimensional assessment criteria and evaluation methods

Evaluation and Feedback Stage 8.1 Develop an evaluation scale for instructor assessment, peer assessment

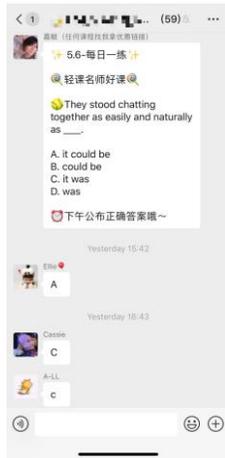
statement	Member1	Member 2	Member 3
Most of the time he/she participates enthusiastically and have positive performance.			
His/her advice is always helpful to me			
He/she often encourages and urges the other team members to actively participate in the collaboration.			
He/she can finish his/her work and study tasks on time.			
I am satisfied with his/her performance.			
His/her contribution to the team is outstanding.			
I would be happy to regroup with him/her if given the chance.			
Total			

(*Score 5,4,3,2,1 on a scale from "very good" to "very bad")

Team name		
Team leader		Team member
group leader	1. The team leader can actively serve the team	
	2. Able to distribute tasks evenly and reasonably	
	3. Able to collect and organize materials	
Team work	1. Each member can actively participate in group activities	
	2. Each member has his or her own specific task and can earnestly complete the task	
	3. Team members can listen carefully and learn from each other	
	4. Pleasant atmosphere and good effect of group cooperation	
Group outcome evaluation		
What are the shortcomings of group activities (e.g., information retrieval, analysis, discussion, summary, etc.)?		

(*Score 5,4,3,2,1 on a scale from "very good" to "very bad")

8.2 Send the question cards in the group chatting room to answer to objectively evaluate the mastery of vocabulary use



Ex:

8.3 Pay more attention to the evaluation of the learners' learning process, and increase the proportion of the influence of the process evaluation results on the final evaluation.

8.4 Set evaluation criteria for all collaborative learning outcomes, and calculate the evaluation results into the final grade

국문초록

언어학습은 읽기, 말하기, 쓰기, 듣기 네가지 능력에 대한 학습으로 구성되어 있다. 언어학습에서 어휘는 중요한 역할을 맡고 있다. 어휘에 대한 지식은 학습자의 전반적인 언어 습득에 매우 필수적인 지표이다. 따라서 어휘학습은 언어학습에서 매우 중요한 것으로 강조되어 왔다. 어휘학습은 학습자가 높은 수준으로 참여함으로써 어휘에 대한 심도 깊은 학습을 유도하는 것을 목표로 요구하며, 성공적인 어휘학습을 위해서는 교수자의 계획적인 지도가 필요하다는 선행 연구 결과가 있다.

그러나 현재 언어교육 현장에서 교수자가 어휘지도를 중요하지 않게 생각하는 경우가 많고 어휘 학습이 암기 위주의 수동적인 학습 형태를 지니기 때문에 학습에 대한 흥미와 그 효과성 떨어뜨린다는 연구 결과가 있다. 따라서 효과적인 어휘 학습을 위해 학습자가 참여할 수 있으며 어휘 사용의 기회를 제공할 수 있고 흥미를 유발할 수 있는 수업의 설계전략 모색이 필요하다.

최근에는 어휘학습 수업에서 협력 학습 방법을 시도하고 있다. 연구 결과에 따르면 개별 학습활동과 비교했을 때 협력적 학습활동은 어휘학습에 효과적인 커뮤니케이션이 가능하도록 하여 학습자가 어휘를 지속적으로 사용할 수 있도록 한다. 이 과정에서 학습자의 어휘학습에 대한 참여도, 흥미도, 동기유발, 상호작용성에서 긍정적인 효과를 가 있는 것이 나타났다. 또한 그룹 학습활동에 참여한 학습자가 개별 학습활동에 참여한 학습자보다 언어적으로 더 정확한 문장을 만드는 경향이 있다는 결과가 나타났다. 따라서 이와 같은 연구 결과에 따라 어휘 학습에서 협력적 학습이 긍정적 영향을 미침을 확인하였다.

한편 SNS 는 흥미성, 실천성, 어포던스, 세계적인 보급성, 상호작용성의 특성을 가지고 어휘학습의 동기 유발, 학습 태도에 긍정적인 영향을 미친다는 연구 결과가 있었다. 또한, SNS 기반 협력학습은 학습자 중심의 학습을 가능하게 하여 협력적 환경에서

상호작용을 촉진할 수 있다는 연구 결과에 따라 학습자가 실재감을 가지고 능동적으로 참여하고 어휘학습에 긍정적인 영향을 미침을 확인하였다. 그러나 관련된 선행연구에서는 어휘학습을 위한 SNS 기반 협력학습에 관한 연구가 주로 효과성 및 영향 요인에 초점을 두고 있으며 어휘학습에서 SNS 를 활용한 협력학습의 구체적 수업 설계 전략이 부족하였다. 따라서 본 연구에서는 어휘학습을 촉진하는 SNS 기반 협력학습 수업 설계 전략을 제시하였다.

본 연구의 연구 문제는 다음과 같다. 첫째, 어휘학습을 위한 SNS 기반 협력학습의 수업 설계 전략은 무엇인가? 둘째, 어휘학습을 위한 SNS 기반 협력학습 수업 설계 전략의 내적 타당성은 어떠한가? 셋째, SNS 기반 협력학습을 활용해서 설계된 어휘학습 수업에서 학습자 및 교수자의 반응은 어떠한가? 이상의 연구문제를 해결하기 위해 설계·개발 연구방법론을 적용하여 크게 세 단계의 연구 절차를 거쳐 설계전략을 개발하였다.

우선 키워드를 바탕으로 선행 연구를 검색한 후, 관련된 주요 문헌 검토 결과를 바탕으로 초기 전략을 도출하고, 수업의 각 단계에 따른 상세 지침을 개발하였다. 그 다음 교육공학 전문가 4 인을 대상으로 개발된 전략의 타당성에 대한 설문 및 심층면담을 실시하였다. 이후 개발된 전략을 적용한 수업을 실시하였다. 그리고 수업에 참여한 교수자 및 학습자의 반응을 수집하여 분석을 진행한 다음 최종 설계전략을 도출하였다. 최종 설계 전략은 8 개 일반 설계 전략과 21 개의 상세 지침으로 구성되었다. 설계 전략은 수업 단계에 따라서 수업 전, 수업 중, 수업 후 세 단계로 나누어서 구성하였다.

본 연구에서는 SNS 기반 협력학습이 어휘학습의 참여도, 흥미성, 효율성에 긍정적인 영향을 미칠 수 있음을 확인하였다. 본 연구의 연구결과는 어휘학습에서 SNS 기반 협력학습의 활용이 학습자의 어휘 사용에 더 많은 기회를 제공하여 어휘에 대한 학습자의 심도 깊은 이해를 지원하였다는 의의가 있으며 이를 어휘학습에 적용하는데 구체적인 전략을 제시했다는 점에서 실천적인 의의가 있었다. 하지만 반복적인 현장 수업 적용 및 수정 보완을 통하여 교수 설계 전략이 개선될 필요가 있으며 학습 성과 분석에 대한 양적 연구를

통해 설계 전략 효과성 검증이 필요할 것이다. 향후 모바일 기기를 학습도구로 활용함으로써 학습자의 지속적인 흥미성을 유지하기 위한 전략 개발 연구를 모색할 수 있다.

주요어: SNS 기반 학습, 어휘학습, 협력학습, SNS, SNS 기반 협력학습

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