

An Attempt of Construction of English Language Intelligent Flipped Classroom Teaching Mode from an Ecological Perspective

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Abstract: With the development of information technology and advancement of education reform, flipped classroom as an essential component of blended learning has drawn substantial attention from researchers and has been put into practice in full swing in modern classrooms. Besides, classroom teaching ecology regards teaching as an ecosystem, and treats teachers and students as the key elements of common development in a harmonious environment. The aim of this study is to explore a systematic construction of English language intelligent flipped classroom teaching mode from the perspective of ecology. Based on the theory of ecology, it first discusses the ecological connotation of English language intelligent flipped classroom teaching with classroom ecological factors and the relationships among them, and further expounds the essence of ecology for constructing an English language intelligent flipped classroom teaching model, and then analyzes the process of constructing the English language intelligent flipped classroom teaching mode on the basis of ecology. Specifically, it includes the construction of an ecological environment, ecological teaching method, ecological subjects' relationship, and ecological learning platform, which ultimately realizes the educational function of the English language classroom ecological system. Additionally, the framework and procedures of ecological English language intelligent flipped classroom teaching have been attempted to be established. Finally, the study summarizes the potential impact of the intelligent flipped classroom on English teaching, and puts forward some practical teaching strategies and guidance for improving English language teaching in the future as well.

Keywords: ecological education; ecological teaching; flipped classroom; intelligent flipped classroom; English language teaching; EFL

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1 Introduction

The term “Ecology” was coined by German biologist Ernst Haeckel in 1886. And the notion ecology of language or language ecology was seriously launched at the beginning of the 1970s by the American linguist Einar Haugen (1906–1994), who gave the following description: “Language ecology may be defined as the study of the interaction between any given language and its environment” (Haugen 1971, 1972: 325). Leo van Lier gave another definition, that is, ecology is the study of the relationships among elements in an environment or ecosystem, in particular the interactions among such elements (Vovawan & Tosalem et al. 2021: 3). In the early 20th century, the ecological ideology, theory and approaches are widely used in the field of sociology, deriving from the concept of ecology of education. The core of ecological education is ecological balance (Shenlin LIU 2008: 33). Since the 1980s, the ecology of education has been introduced to curriculum research or research of teaching strategy, thus forming the post-modern education ecology. At the beginning of this century, Tudor (2001) published *The Dynamics of Language Classroom* (Hongqin CHEN 2012), and Leather (2003) published *Language Acquisition Ecology*, marking ecological foreign language classroom teaching being established (Jiane PENG 2015: 38).

In the biological world, the field of ecology deals with the research of mutual relations of organisms and the environment in which they live. In the educational context, the situation is similar. There is free cooperation between the participants in the educational process that also makes up a fluid network, resulting in learning which follows the ecological model of nature (Kirova & Veselinovska 2011: 1221).

Likewise, in English language teaching, ecological approaches to language teaching have captured much attention from researchers. Since the development of multimedia, network and artificially intelligent technology, English language teaching has been stretched and has the trend to be ecological. Moreover, the fast development of the Internet with its network of users who cooperate, as well as a number of tools to facilitate this cooperation, provides educators with new opportunities to introduce those who learn into such an “ecology” of learning and bring them in contact with other people who speak English in order to develop their communicative competence through authentic interaction (Kirova & Veselinovska 2011: 1222). In the context of post-modern education ecology, the ecological English language intelligent “flipped classroom” has been in full swing in modern classrooms ranging from primary schools to universities.

In English as a foreign language (EFL) teaching, active learning approaches are now considered to be more effective when compared to teacher-centered approaches. The flipped classroom is one of the many active learning approaches that emerged as a result of a quest for a method that serves the changing needs of the new age and has been readily welcomed by instructors and researchers (Turan & Akdag-Cimen 2019: 1–2). Yulian (2021: 209) stated that among various ways of technological-based pedagogy practices in English language teaching is the flipped classroom teaching model. Many scholars have some insights for the flipped classroom teaching mode. A flipped classroom model, as an emerging teaching method, has a great extent to cope with difficulties in EFL contexts as in time, space, and materials (Lee & Wallace 2018: 2). Besides, Alsowat (2016: 109) suggested that the concept of the flipped classroom is a combination of reversed inside and outside classroom activities. Students take responsibility of the outside-classroom activities through watching videos,

visiting course-related websites, listening to audio, reading related references, etc. On the other hand, teachers have to create an interactive inside-classroom environment that enhances pair work, group work, hands-on activities and high-level thinking activities. Furthermore, the flipped classroom is a unique learning approach that enables students to obtain prior knowledge and information from instructional videos before the class, and apply the theory directly to the classroom (Hsieh et al., 2017: 2). And Chinese scholars indicated that flipped classroom makes full use of multimedia technology, extends classroom teaching, and follows knowledge construction rules of individual learners. It emphasizes student-centered instruction (Yan ZHENG 2016: 126).

In recent years, studies focusing on flipped classrooms have become a spotlight in language teaching and learning, particularly in blended learning since they elicit interests among researchers in English language learning (Yulian 2021: 509). A number of studies have examined the application of the flipped classroom method to improve learners' English reading, academic writing, oral skills, and critical thinking competence. Hung (2015) investigated the impact of the flipped classroom in terms of academic achievement, learning styles, and students' engagement of English language on learners' active learning. Alsowat (2016) explored the effects of an EFL flipped classroom teaching model on learners' English language higher-order thinking skills, engagement and satisfaction. Amiryousefi (2017) investigated the effects of flipped learning on EFL learners' L2 speaking, L2 listening, and out-of-class participation and engagement with course materials and activities. Yulian (2021) investigated the effect of the flipped classroom on improving critical thinking for critical reading of EFL learners in higher education. Based on the findings concerning the impact of an English language flipped classroom on EFL learners' language learning, it can be concluded that a flipped classroom offers flexible instructional time, creates a dynamic and interactive learning environment, and allows for a deep investigation of concepts. Besides, a flipped classroom model can be regarded to be beneficial in foreign language teaching as it promotes two key points to success: student-centered learning and autonomy (Amiryousefi 2017: 2-3). Nonetheless, there have been few empirical studies examining the application of flipped classroom teaching mode in English teaching (Jinhui XU, Chunmei YU 2022: 73). Only the domestic scholar Zhang Hui (2022) investigated the use of flipped classroom teaching mode in college English based on the mobile learning. Therefore, this study presents an ongoing snapshot of the ecological perspective in constructing the English language intelligent flipped classroom teaching mode with a focus on how the perspective might inform the English language intelligent flipped classroom teaching.

2 The Connotation of Ecological Education

As for ecological education, for educators there are two important things, one is to know the "subject-object" that he/she educates and the other is what the anticipated goal of education is. We must bear in mind that education is a productive activity. By producing and influencing the formation of a personality, an educator does not behave as a servant having ready-made recipes but as a creator. He/she creates ambient space and influences the formation of psycho-physical features of a young person (Kirova & Veselinovska 2011: 1222). During the process of teaching, on the one hand, the educator widens the vision of students' sovereignty, and on the other hand, it promotes his/her own experiences, attempts and practical-theoretical knowledge.

In real classroom teaching, what teachers need to do is to provide the learners the natural development to be

a mature person, not just let learners depend on teachers, which creates a part of the prerequisites for accumulating a wide quantity of knowledge, good habits and full enough of abilities for the learners. Hence, the process of this education is an ecological activity.

3 Ecological English Language Classroom

“Ecology of classroom” was first put forward by the United States education scholar Waller in *The Sociology of Education* (Waller 1932: 219–223).

An English language classroom is a place where the teachers conduct teaching activities, control the students’ affective factors, coordinate the students’ learning behavior, and ensure the quality of language input in the process of language teaching. Meanwhile, it is also the important place where teachers and students can communicate with each other, and thus the students can gain comprehensible language input. Ecological English language classroom refers to the three factors (teachers, students and classroom environment) that interact and influence each other in an English classroom, thus constituting the organic unification of the whole (Yan ZHENG 2016: 124).

According to ecology theory, English language class is like an ecological system that consists of the teaching subject (teachers) and the teaching receptor (students) (Juan DU, Yang YU 2012: 125). And such ecological factors as a classroom teaching environment, teachers, students, English language teaching materials, teaching methods, and the mutual relations between teachers and students constitute a harmonious English language class.

3.1 *The components of ecological English language classroom*

From the perspective of teaching ecology, an English language classroom is a place where each ecological subject interacts with each other and ecological subjects interrelate with their surrounding environment, constituting a harmonious, balanced dynamic environment (Qi XUE 2013: 107). The ecological English language classroom model tends to be composed of four elements, namely, ecological teaching environment, ecological instructional design, the ecological relationship between teachers and students, and ecological teaching assessment.

3.1.1 *Ecological teaching environment*

The teaching environment includes the external classroom environment (physical environment) and language learning environment. The external classroom environment contains teaching instruments, textbooks, the walls, blackboards, tables and chairs of the classroom, and other factors. As Sukhomlinsk says, “trying to make the walls of the school talk, on the walls of the gallery, in the classroom and in the playroom, students often see everything which is of great significance for the formation of his spirit.” For English teachers and educators, they can post famous English quotations, open English zone on the boards, set bookcases, display English books and magazines in the corner and introduce some histories, cultures, natural scenery and customs of western countries to students. In this way, it is helpful for students to create an English atmosphere to promote their interest in English. Meanwhile, Teachers must learn to appropriately use multimedia, internet technology, and teaching resources to provide a vivid and colorful environment for teaching and learning.

3.1.2 *Ecological instructional design*

The ecological connotation requires that English instruction should be goal-pluralism and content-diversity

(Shenlin LIU 2008: 35). On the one hand, English teaching is no longer to teach students basic language knowledge, but to train “students’ comprehensive ability” as the leading “multiple targets”, namely, training students’ language skills, expanding language knowledge, cultivating emotional attitude, mastering learning strategy, promoting cultural awareness and improving cultural literacy. Also, an effective English language classroom teaching requires teachers should command solid pedagogical knowledge and skills in explicitly elaborating various language-related content, such as grammar, vocabulary, and cross-cultural information (Shuang ZHAO, et al. 2022: 66). Therefore, in the process of English teaching, English teachers have to foster students’ critical thinking ability and intercultural cultural competence and, try to promote their sensitivity of foreign cultures. On the other hand, from the perspective of linguistic ecology, English instruction not only contains such basic language knowledge as phonetics, vocabulary, grammar, and syntax but includes history, geography, literature, cultural knowledge, etc. In English classroom teaching, teachers should import students some cultural knowledge, make an appropriate cultural contrast between native and western countries, and make students pay attention to native cultures, thus diversifying English teaching. In addition, in the era of the Internet, teachers try to make full use of online teaching resources such as foreign language journals, e-writing, e-learning, and recording materials of radio clips to make English language teaching close to real-life for students.

3.1.3 Ecological relationship between teachers and students

Ecological English language teaching requires teachers and learners should build an equal dialogue relationship. Paulo Freire pointed out that the identity of the teacher is constantly changing, sometimes as a teacher and sometimes becomes the knowledge initiator of the students. And postmodernism advocates a new type of cooperation dialogue and a democratic equal relationship between teachers and students (Sixu ZHOU 2005: 176). Therefore, it requires that the teacher should first put himself/herself into a model of the democratic dialogue. For one thing, he/she can try to make each student master language knowledge and skills as well as methods. For another, for the teacher, besides teaching his knowledge in class, he/she has to pay much attention to students’ feelings, attitudes and values, and give his/her students more concern, care, and respect and help to build a harmonious relationship between students and them. Moreover, as students become the constructor of knowledge in class, teachers are no longer the center of the power of class, and students also have the right to participate in the activities to make them as the teaching partners.

3.1.4 Ecological teaching assessment

Ecological linguistic teaching requires that assessment of English language teaching should combine formative assessment with a summative assessment to take each student’s learning habits and learning strategies into account, and give a comprehensive and objective evaluation of each student’s learning process and effect (Shenlin LIU 2008: 37).

Formative assessment focuses on students’ learning process. It is a developmental assessment through a long time of observing and recording students’ learning results, including the evaluation of students’ daily learning performance, their attitude towards learning, and their emotions reflected in learning. Formative assessment pays much attention to students’ development of the learning process in order to assess the advantages and disadvantages of teaching activities. Also, its aim is to promote students’ learning motivation and help students effectively to control their own learning process, cultivate their cooperation spirit, and make them have a sense of

achievement (Goulah 2006). Summative assessment refers to the evaluation on the final results of class teaching after ending a period of teaching. Additionally, summative assessment is the assessment of teaching quality in the form of a unit, a module, a period, a semester or the discipline teaching after education. Its purpose is to make a conclusive assessment of students' learning achievements over a certain period (Goulah 2006). The effect of teaching activities is the primary base of evaluating classroom teaching. Therefore, the formative and summative assessments are supplementary to each other in ecological English language teaching (Yan ZHENG 2016: 126).

4 English Language Intelligent Flipped Classroom

In the era of information and technology, English language teaching has shifted from a teacher-centered instruction environment to a more learner-centered, communicative-based one. This new learner-centered model does not need a lot of teacher-talk time during class through learning from the pre-class assignment, and expanding or deepening the learning in class. This method of transforming classroom-based courses is sometimes referred to as the *inverted* or *flipped* classroom (Young 2009). With the popularization of the Internet, multimedia and intelligent artificial technology, the English language flipped classroom can be regarded as an intelligent "flipped classroom." The internet is the most important ecological element of the flipped classroom. And the essence of the intelligent flipped classroom is represented in the notion of life-long education, and its aim is to nurture learners' autonomous learning ability and critical thinking competence (Ye Ling et al. 2017: 4).

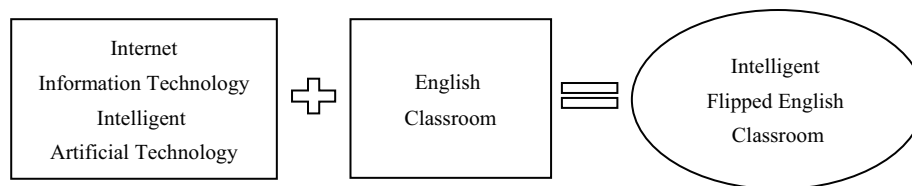


Figure 1 Construction of English language intelligent flipped classroom

4.1 The origin of flipped classroom teaching mode

Flipped classroom originated from a teaching experiment by Salman Khan who made an impassioned speech at the TED (Technology, Entertainment, and Design) conference, which triggered a high concern for the flipped classroom among the American elites (Jie HE 2020: 3). Then the American teacher uploaded PPT with real-time explanations to the Internet to help students who were absent from class make up missed lessons. Later, they called the teaching mode that students watch teaching videos to learn before class and discuss problems with classmates and complete homework during class to internalize knowledge as flipped classroom teaching mode (Jinhui XU & Chunmei YU 2022: 69).

4.2 The concept of an intelligent flipped classroom

The concept of flipping the classroom emerged originally from the idea of reversing homework for a class assignment. In blended and hybrid learning, the flipped classroom has drastically changed the paradigm of swapping the assignment from home to the classroom (Yulian 2021: 510). The flipped classroom as a key component of blended learning arouses great interest among researchers and educators nowadays. It is defined as

a pedagogical model in which the lecture and homework elements of the course are reversed (Bergmann & Sams 2012).

The intelligent flipped classroom integrates modern information technology and artificially intelligent technology into classroom teaching and learning. This teaching mode breaks time allocation of the traditional classroom teaching and the identities of teachers and students have been changed completely. That is, the teacher is transformed from the original imparts of knowledge into the organizer of teaching activities; the student is switched from a passive listener to an active participant in the teaching activities. In addition, the intelligent flipped classroom opens up face-to-face class time, enabling teachers to interact with students by discussing points of confusion, providing real-life examples relevant to course content, challenging students to think more deeply about the complex activity processes, and monitoring learning activities. This significant switch impacts the roles and responsibilities of instructors and students alike and holds the potential for improving classroom-based learning experiences for both groups.

4.3 The notions of intelligent flipped classroom

Intelligent flipped classroom is a blended learning and as well as an inquiry-based learning mode. This kind of teaching mode absorbs the constructivism theory, cooperative learning theory, autonomous learning theory, and life-long education theory. Thus four notions of intelligent flipped classroom emerge in order to guide students' learning, which requires students should cultivate meaning-constructive awareness, cooperative learning awareness, autonomous learning, and life-long learning awareness to promote their learning efficiency and competence.

4.3.1 Meaning-constructive learning awareness

The learning process of a flipped classroom is to absorb knowledge outside class through watching video, and internalize what the teachers import via task-reporting in class. The Constructivism theory is the basic foundation of flipped classroom teaching mode. This theory emphasizes the learner-centered learning. In flipped classroom teaching process, teachers upload micro-videos to the network platform before class. And students learn independently and discuss problems with their classmates and give feedback. On the basis of the feedback from students, teachers tend to give personalized guidance and help students solve the problems that students are faced with outside class (Jinhui XU & Chunmei YU 2022: 69).

4.3.2 Cooperative learning awareness

Cooperative learning awareness plays an important role in flipped classroom teaching. Cooperative learning theory is an essential theoretical basis for the English flipped classroom of universities. An effective teaching activity requires team work of the students. In class, it is likely that students complete the tasks assigned by the teachers in groups, and teachers will let them discuss the specific topic and then reward them in groups. This kind of teaching activity is called cooperative learning. In the process, students' free expressive willingness, ideas, and creative thinking spring out in class, which fosters students' learning interest to a certain degree.

4.3.3 Autonomous learning awareness

Autonomous learning awareness is a critical factor in evaluating whether the teaching goal is achieved. Flipped classroom teaching mode advocates the model of learning which lays stress on independent learning by watching micro videos or other materials before class. The most important element of flipped classroom teaching

mode is to make students have the ability of autonomous learning. Teachers should pay much attention to students' command of relevant theoretical and practical knowledge and the initiative of autonomous learning (Jinhui XU & Chunmei YU 2022: 69–70).

4.3.4 Life-long learning awareness

Intelligent flipped classroom incorporates information technology literacy into language teaching and its purpose is to nurture students' autonomous learning ability and smart learning spirit. And autonomous learning ability is based on life-long learning. As long as life-long learning notion has been rooted, the autonomous learning ability and critical thinking competence will last for a long time. Moreover, the notion of life-long learning meets the trends of online and blended learning as well in the current time. Thus, besides the teacher, it requires that students should promote life-long learning awareness to accumulate basic and specialized knowledge in order to enhance their overall ability.

5 Construction of Ecological English Language Intelligent Flipped Classroom

English language intelligent flipped classroom teaching as an ecological system of micro education, pays much attention to the balance of the whole teaching system. To construct ecological English language flipped classroom is to treat the English language classroom as an ecosystem. In this ecosystem, ecological subjects interact with each other, and ecological subjects interrelate with their surrounding environments, thus achieving a dynamic balance (SUN Xuchun 2010: 50–52).

5.1 Ecological environment construction of English language intelligent flipped classroom

In general, the ecological environment of an English intelligent flipped classroom is composed of two environmental elements, namely, the physical environment and the language environment. The physical environment in the English classroom tends to be the layout of the classroom, facilities, and intelligent equipment. And language environment usually contains a natural language environment and a classroom language environment. In this study, language environment mainly refers to classroom language environment, which includes language learning environment for students and classroom teaching environment for teachers.

5.1.1 Ecological physical environment construction

The construction of the physical environment in an English language flipped class refers to the social factors of the optimization of the ecological environment, including classrooms, class size, seating arrangements and English teaching facilities, and so on. The research found that the classroom is helpful in cultivating two kinds of second language learners, namely comprehensive academic ability and reasoning ability, often referred to as intelligence.

The layout of the classroom and English facilities has a certain influence on students' psychological minds. Therefore, a classroom which is full of English learning atmosphere through posting English-speaking countries maps, displaying English proverbs, English books and newspapers on the wall, broadcasting English Language songs, etc., can inspire students' interest in learning English than one without any element of English classroom. The English teaching facilities, including such as computers and projectors, multimedia and network play an indispensable role in English teaching. If this equipment is applied properly and reasonably to classroom,

teaching efficiency will be enhanced.

Also, the class size and arrangements of seats have an influence on students' body and mind. In a small class, every student can be caught the attention of the teacher, and students have abundant opportunities to participate in classroom activities to improve their linguistic and communicative competence. The arrangements of seats also have a unique effect on students' attitudes, behavior. Flexible seating arrangements can facilitate discussion between students and lessen the distance between students and teachers to enhance communication between teachers and students (Yan ZHENG 2016: 126).

5.1.2 Ecological language environment construction

As is well known, the best way of mastering English is to apply English to practical use in real learning life. However, in real language learning, the more knowledge about English, the fewer chances students have to use English. Creating the environment of using language in class requires that teachers should create a variety of authentic scenes based on the teaching task. For one thing, teachers should try to use target language (English) in teaching; thus, students will develop the habit of communicating with others in English. For another, Teachers try their best to make full use of new technology such as multimedia, the internet, and artificial intelligent technology to use English resources to improve English teaching effect. Meanwhile, students have to form the habits of using software to learn English online and below-the-line learning. And the anticipated flipped learning effect is reached to a certain degree.

5.2 Ecological teaching method construction

The teaching method is one of the components of the classroom ecosystem in a foreign language flipped classroom. Flipped classrooms facilitate students to complete teaching tasks outside the classroom through teaching videos, and in the class, students discuss, communicate and cooperate with each other to solve problems. It is a learning mode that combines students' self-learning and teachers' guiding for their students. Foreign language flipped classroom teaching is a means of increasing the interaction between teachers and students. It expands the breadth of classroom teaching and the depth of students' classroom participation and leaves more room for learning and thinking to students, thus giving students a deep understanding and comprehension of what they have learned (Chunling ZHANG 2014: 15).

First of all, teachers should respect students' individual differences. Students can freely choose their own learning styles through the combination of online and below-the-line learning. And teachers can arrange different teaching tasks for students according to their different learning levels.

Second, teachers can carry out a three-in-one combination teaching mode, namely, the combination of teachers' leading role in directing and supervising teaching and students' initiating play in learning; the combination of individual training and group activities and the combination of language input and output. As the student is the main part of English learning, the learning task must be completed by students. In the meantime, the learner's knowledge is limited and they lack self-directed learning ability, it is necessary for them to appeal to their teachers to guide and supervise their learning.

5.3 Ecological subjects' relationship construction

Traditional classroom teaching is a form of in-class teaching knowledge. However, flipped classroom

teaching carries out knowledge delivery both in class and outside class and makes students develop the habits of autonomous learning by watching teaching video and using the internet. In flipped classroom teaching, the teacher and the student are the primary subject factors in the ecosystem.

First of all, a trusting relationship between teachers and students should be build. On the one hand, the teacher should believe in students' ability, let students go off their hands and try to apply what they have learned in English into practice. On the other hand, teachers try their best to update knowledge, accumulate teaching experience, transform teaching ideology and improve comprehensive quality, teaching ability and personality charm to win the respect and trust of students. It is helpful to make students change their learning attitude and arouse their enthusiasm for English learning.

Second, a cooperative relationship among students should be established. In English flipped classroom teaching, the student should not be treated as an isolated individual but be an important ecological factor in the classroom ecosystem. Every student has to make progress in language class by discussing, communicating and cooperating with each other. An effective and useful way to promote English classroom ecosystem balance is to build information and communication link between students and create a cooperative and interactive atmosphere in class. As is known to all, English learning is not only about mastering English voice, intonation, vocabulary and grammar knowledge, but what is most important is learning to use English in reality. And the purpose of building a good team cooperation relationship between students and establishing a language learning mechanism of consolidating and applying English knowledge is to help students learn to use the English language and improve their linguistic competence in language learning.

5.4 Ecological learning platform construction

In an ecological foreign language flipped classroom, technology is one of the most important ecological factors. The flipped classroom technology encourages interactions and cooperation among students with mutual projects and group work. Besides, students are engaged in peer-to-peer assessment, giving feedback to the works of their group mates according to the developed criteria. Collaborative projects make students interact, cooperate, learn from each other and help each other (Marsh 2012). This process of learning with peer-to-peer assessment, mutual tasks and projects as well as interactions and cooperation by e-learning, e-environment is flipped classroom teaching. As we know, in a foreign language flipped classroom, English teaching resources are the primary components of teaching in class where teachers impart language and knowledge input to students. These resources include English textbooks, video, English newspapers, magazines, and web Network resources, and so on.

Therefore, it requires that e-learning and network learning platforms should be established. Through opening this flipped learning platform and creating an e-learning environment, a lot of benefits for teachers and students are gained, such as a variety of tools for studying and communication, the flexibility of use, technical support, low cost, and so on. Students' work was organized in the classroom and e-learning environment. Before face-to-face classes, students watched short video lectures concerning the topic of the lesson, studied additional online resources, posed questions for discussions in forums. Time in class was devoted to clarifying the grammatical and lexical phenomena that caused difficulties, making presentations and reports and discussing the most important issues. After face-to-face classes, students assessed the work of their peers, checked their knowledge of the

material studied by doing tests and shared their opinions on the lesson (Evseeva, Solozhenko 2015: 208).

6 The Procedures and Practice of Intelligent Flipped Classroom Teaching Mode in English Teaching

In the EFL environment, students have greater opportunities to use the target language in collaborative learning experiences that deepen and advance the use of the language with immediate and effective feedback from the teacher (Mehring 2016: 2). For example, the purpose of a writing class is to develop students' abilities to express their ideas in cohesive, clear reports in an academic situation. Before class, students may review flipped materials that focus on some of the major parts of a paper, such as title, topic sentences, body, transition sentences, conclusions, citations, and references. Then, the face-to-face class is arranged in a mini-workshop setting with small groups of three to four chairs scattered around the room. On top of each group of chairs is a number labeling its ranking in the overall grouping of chairs and a topic for students to focus on and discuss. The students, with their papers in hand, are divided up and given a number, the number matching one of the groups of chairs. The instructor explains that students need to approach the small group of chairs and examine the parts of their paper that relate to the topic for that specific group of chairs. Focusing on the topic that accompanied each group of chairs, students can demonstrate using their papers as examples as well as ask questions to better understand why they are having difficulties. After a period of time the instructor can ask students to move to a new group of chairs and a new challenge will wait for them. During the entire process the instructor moves around the room, helping to clarify answers or questions and assessing the whole process of learning (Mehring 2016: 2). This kind of classroom teaching mode can be called flipped classroom teaching model.

With the advent of the Internet, multimedia, and intelligent artificial technology, the intelligent flipped classroom is entering every modern classroom. So what is the intelligent flipped classroom like? And how does the intelligent flipped classroom operate in a real classroom? The keys to the two questions will be demonstrated in figure 2 and expounded in detail as follows.

In the process of intelligent flipped classroom teaching, first of all, the teacher should prepare some pre-class learning materials for students, such as videos, micro-videos, PPT, and exercises recorded in advance (Jinhui XU & Chunmei YU 70). These pre-class learning materials tend to be prominent, comprehensive, and useful to stimulate students' motivation and potential to learn English. Besides, teachers can guide students to make use of online resources such as e-learning, e-writing and other digital learning devices. For students, they can try their best to complete the tasks and exercises arranged by the teacher before class. And then, the teacher designs some specific questions according to the curriculum and teaching goals which meet students' learning requirements. These questions can be answered by every student, and there is no definite answer. And students discuss the questions in groups. After the discussion, one student representing each group reports the result of the discussion to the whole class, and then the teacher organizes the teaching activity focusing on the feedback of all groups of students on the basis of the results of their discussions. After the feedback, students do the exercises arranged by the teacher in advance for practice and consolidation. These exercises are in the form of writing with some keywords and specific topics for every student. Students can make full use of online materials to look for corpus outside class. After finishing the exercises, the teacher lets students exchange their compositions, read it,

and correct the mistakes with each other. After correcting, the teacher begins to give a detailed explanation of the composition, and lets students reflect on the mistakes by themselves and accumulate language knowledge. In the end, the teacher gives an overall evaluation of the engagement of the students in class and their daily performance outside class, as well as their merits and shortcomings with the formative and summative assessment. This process of teaching activity can be considered as the intelligent flipped classroom teaching mode. It represents the nature of flipped classroom teaching mode, that is, the meaning-constructive learning spirit, cooperative learning spirit, autonomous learning awareness, and life-long learning notion.

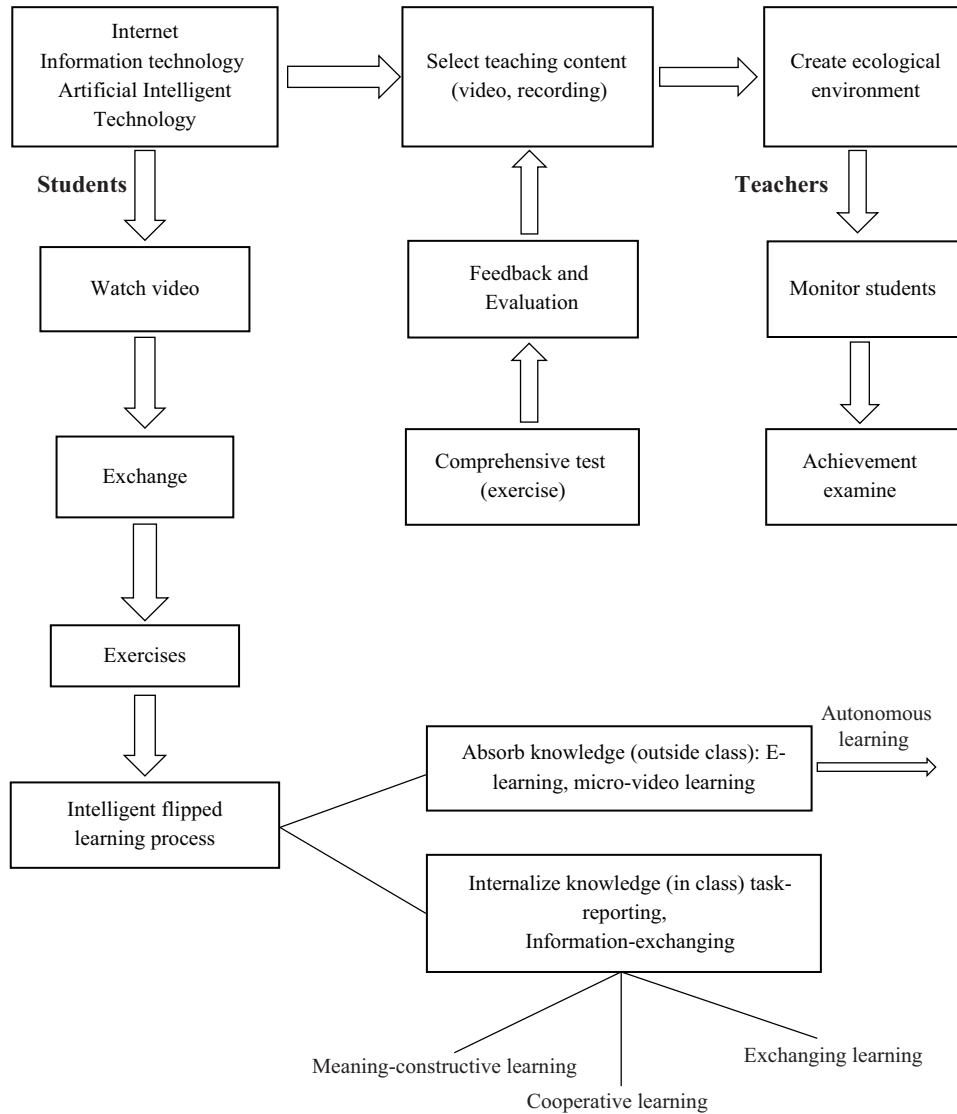


Figure 2 The intelligent flipped classroom teaching mode

7 Implication and Conclusion

This study expounds on a systematic construction of foreign language flipped classroom teaching from the angle of ecology. Through the construction of an English language intelligent flipped classroom teaching mode,

it can facilitate the educational function of the foreign language classroom ecological system. Also, this mode is of great significance for the improvement of English language teaching. It is proved that the integration of the intelligent flipped classroom into English language teaching encourages students' motivation and interest in English learning, and cultivates students' critical thinking and cross-cultural ability as well as promotes students' autonomous learning, cooperative learning, and life-long learning ability. Furthermore, it has a profound impact on students' self-discipline and self-directed learning ability. Today in the age of globalization and information technology, ecological English flipped classroom teaching mode provides an opportunity and as well as challenges for both teachers and students to adapt themselves to such a creative, vital and significant teaching mode. Besides, an intelligent flipped classroom puts forwards some higher requirements for English teachers, such as information literacy, critical thinking ability, and overall summarized and evaluative skills. The knowledge imparted to students needs to be constantly updated to meet the goals of the current curriculum. Also, the teacher has to adjust teaching strategies on the basis of the performance and feedback of the students' online and offline learnings.

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