# A Narrative Review Of Deep Learning Teaching Models In High School EFL Reading Comprehension Teaching Design In China

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## Abstract

Introduction: Deep learning teaching design has become a hot topic in education science. Many EFL teachers in China are trapped in the" exam-oriented "and ignore cultivating students' abilities, such as critical thinking, creative expression, analyzing and solving problems, and transfer application, especially in high school students' EFL reading comprehension classes.

Method: This narrative review focus on four models related to deep learning. The objective is to provide researchers, educators, and EFL teachers in China with a comprehensive review. It is of great reference for them to enrich and optimize the teaching methods of EFL reading comprehension teaching. The models include Wu Xiujuan's (2014) deep learning teaching general process model, Knud Illeris' (2017) process and dimensions of deep learning teaching, Li Jinyan's (2021) instructional design elements of deep learning teaching, Eric Jensen and LeAnn Nickelsen's (2008) deep learning teaching road map. Thirty-eight articles published between 2014-2022 on the illustrated models were collected from multiple online databases such as China hownet, Google scholar, and ERIC. Further, fourteen of them that met the inclusion criteria were reviewed for this paper.

Conclusion: The deep learning teaching design in EFL reading comprehension includes the environmental elements, teaching content elements, teaching activity, teaching evaluation, teaching objective aspects, and question design elements.

**Keywords:** deep teaching; deep learning; EFL reading comprehension teaching design; high school

## Ⅰ.INTRODUCTION

The English Curriculum Standards (2017) puts forward new requirements for students' development direction from the aspects of language, thinking, and learning ability. Teaching should focus on cultivating students' higher-order thinking ability and pay attention to improving students' knowledge and accomplishment in the teaching process.

As one of the three main subjects (Chinese, maths, English) of China's national college entrance examination, English has been a subject that high school students need to perform well with high scores to enter a reputable university. For a long time, EFL teaching in high school has been rigid and nothing new. Under the pressure and challenges of increasing student enrollment, high school EFL teaching in China is increasingly exam-oriented and neglects ability calculation (Zhao, 2018).

Exam machines have emerged, and students' English ability is insufficient. In reality, the most common and outstanding problem of classroom learning is precisely the lack of connotation, quality, and depth, especially in EFL reading comprehension. Students' superficial learning and incomplete understanding of knowledge in EFL reading comprehension result in low quality of EFL reading comprehension learning (Zhuang, 2011). Students lack self-reflection and reading strategies in EFL reading comprehension learning. Students' superficial learning and incomplete understanding of knowledge in EFL reading comprehension result in low quality of EFL reading learning (Zhuang, 2011). Students lack self-reflection and reading strategies,

and teachers seldom guide students to pay attention to individual reading methods and approaches in EFL reading comprehension teaching (Lin, 2020).

Teaching design of High school EFL reading comprehension promotes students' comprehensive development in knowledge and ability, process and method, emotional attitude, and values. The internal relationship between deep learning teaching and high school EFL reading comprehension teaching design includes two levels. On the one hand, deep learning aims to change students' learning methods, help students learn to learn and promote the improvement of students' comprehensive ability, and put forward new requirements for processing knowledge in teaching design. The deep learning teaching design reflects progressive, reflective, and developmental characteristics. On the other hand, high-quality teaching design can make it an organic whole by reasonably arranging various elements of the teaching process and promoting the realization of students' deep learning by cultivating students' reading and core literacy (Fredricks J A, 2016).

The combination of deep learning and high school EFL reading comprehension teaching aligns with developing students' EFL core competencies and is an inevitable choice for reforming EFL reading comprehension instruction in the information age（Wang, 2021). This new concept and model focuses on developing learning ability, integrating it into the actual situation, and improving English subject ability by reshaping learners' knowledge construction path. Therefore,

promoting students' deep learning in the classroom is the inevitable choice of EFL reading comprehension teaching in high school (Liu, 2021).

Hence, there is a need to explore effective teaching design strategies for improving high school students' EFL reading comprehension ability in class. Therefore, EFL reading comprehension teaching needs to change the previous teaching model and provide students with a rich classroom experience by innovating methods and models.

The following definitions of key terms have been adopted for this review：

i. Deep teaching- Deep teaching is based on the profound interpretation and processing of knowledge, focusing on the relationship between the inside and outside of knowledge, paying attention to students' existing knowledge and experience, and fully mobilizing the curiosity and initiative of students in learning. Enable students to master knowledge skills, obtain conceptual understanding, and form the thought and concept of the subject; Develop students' higher-order thinking ability and subject quality of cultural sensitivity teaching（Wu, 2018).

ii. Deep learning- Deep learning includes higher cognitive goals, the cultivation of higher-order thinking ability, reflection, and focus on the heightened emotional, information recognition, extraction, integration, and transformation (Duan & Yu, 2013). Pay more attention to the potential significance of knowledge, themes, and principles. Look for principles and models behind knowledge, establish connections between old and new knowledge, and combine new knowledge with real-life problems (Zhang, 2018).

iii. EFL reading comprehension teaching design-Through specific organization planning, pay attention to the psychological and physical characteristics of high school students, and organically integrate teachers, students, training content, teaching objectives, and other elements in EFL reading teaching activities to cultivate students' reading literacy (Li, 2020).

v. High school-High school was also named senior high school. In China, senior high school education includes ordinary senior middle schools, ordinary secondary specialized schools, adult senior high schools, vocational high schools, intermediate technical schools, and vocational secondary specialized schools. Traditional secondary schools, this study refers to ordinary senior middle high schools, and it lasts three years. Senior high middle schools are higher education after the nine-year compulsory education in China. After the high school stage, students will enter the high education(college/university) stage(The educational system of the People's Republic of China,1951).

## II. MAJOR THEORETICAL MODELS IN EFL READING DEEP LEARNING TEACHING

The models reviewed in this section are Wu Xiujuan's (2014) deep learning teaching general process model, Knud Illeris' (2017) process and dimensions of deep learning teaching, Li Jinyan's (2015) instructional design elements of deep learning teaching, Eric Jensen and LeAnn Nickelsen's (2008) deep learning teaching road map. These models and corresponding studies have been discussed chronologically according to publication dates. Furthermore, there are three main reasons for choosing these specific models:

i. All these models are focused on deep learning teaching.

ii. These models are very similar to EFL reading comprehension teaching, which aligns with the concepts of EFL reading comprehension teaching.

iii. These models are closely related to each other in terms of constructs and concepts. They all reflect the characteristics of deep learning teaching to some extent. For example, it emphasizes the application of critical thinking, active knowledge construction, and the transfer and application of knowledge.

v. Many deep learning researchers have highly recognized these models. Many researchers have referred to these models in deep teaching.

II.a    Deep Learning Teaching Road Map (Eric Jensen &LeAnn Nickelsen,2008)

Eric Jensen and LeAnn Nickelsen proposed (2008) a teaching approach to deep learning. This model emphasizes the pre-evaluation of students, the construction of positive learning culture, and the deep processing of knowledge. At the same time, it highlights the final evaluation of students' deep learning quality. In this teaching road map, teachers should start by determining the evaluation criteria of learning outcomes and what kind of learning self-standard they want students to achieve. Teachers should ensure that the student's current knowledge and level are: safe, and supportive, and belonging to the learning culture guarantees students' positive learning emotions. Only students are in a positive learning emotional state. To achieve deep learning, teachers need students to have the necessary knowledge and skills to prepare for learning new knowledge. What the teacher needs to do next is to adopt the deep learning teaching strategy to promote the connection between the previous knowledge and the latest knowledge and the deep processing of the knowledge based on it. The road map shows in fig1.
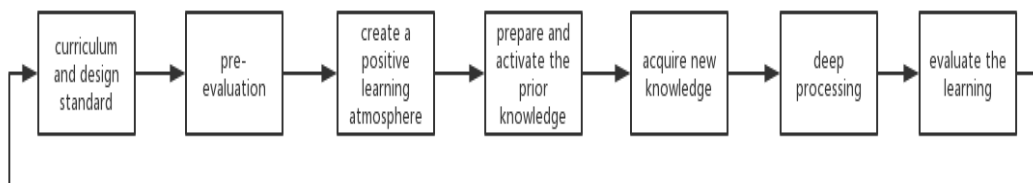
FIG.1. Eric Jensen and LeAnn Nickelsen'S(2008)Deep Learning Teaching Road Map

According to Eric and LeAnn(2008), Shaping teaching conditions for deep learning includes the complete organizing of knowledge. Analyze students deeply, establish a positive learning atmosphere, a link between old and new knowledge is the key to acquiring and processing new knowledge, and promote teaching evaluation.

In high school, EFL reading comprehension teaching requires the reading teaching designers to understand and think about the text deeply, analyze the historical, social, and cultural background of the text, and establish the complete relevance between the new and old knowledge, as well as the connection between the text content and the learners' life experience in the process of designing the text teaching, to stimulate students' imagination and realize the meaning construction learning, and avoid the separation of knowledge from its background, significance, and experience in high school EFL reading comprehension teaching (Ma, 2021). Good teacher-student relationships and student-student relationships are conducive to students' deep learning. Evaluation in EFL reading comprehension teaching can provide timely feedback on students' learning situations, and teachers can adjust strategies according to the evaluation results. At the same time, it also promotes students' enthusiasm (Biggs, 2015).

This model provides reference and guidance for implementing deep learning teaching in EFL reading comprehension. It is a learning method to guide students to learn in the process of self-reflection. In the teaching design of EFL reading comprehension in high school, we need to help students learn reading methods and strategies in deep exploration and thinking and constantly train students' self-reflection and self-evaluation abilities. Overall, this model provided valuable insights concerning deep learning teaching, referring to ELF reading comprehension deep learning teaching in high school. However, This model puts more emphasis on the shaping of the external conditions of deep learning teaching. It ignores the importance of students' active construction of knowledge, initiative, participation, and ability to cooperate, communicate, solve problems, and transfer and apply knowledge (Zhao, 2018).

IIb. The deep learning teaching general process model (Wu, 2014)

Wu Xiujuan (2014) believes that deep learning is essentially a specific form of learning, and its implementation process has something in common with the realization process of general learning. Therefore, based on their understanding of deep learning, Jean Piaget's knowledge classification learning theory, and Bloom's educational objective classification method, and referring to the deep learning framework of foreign researchers, a general process model of deep learning teaching was developed by Wu Xiujuan (Fig.2).
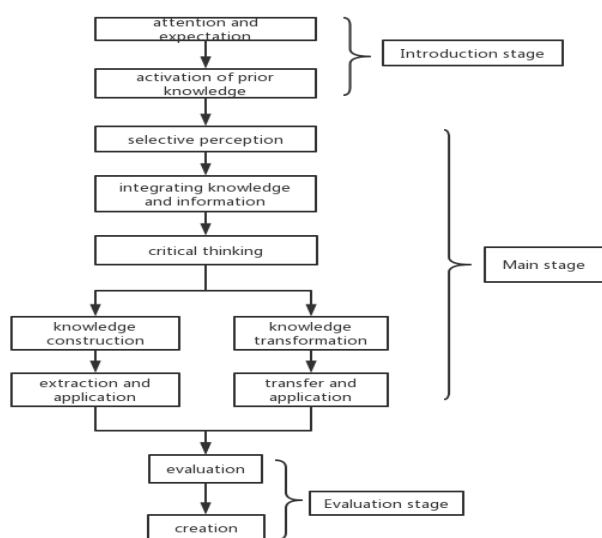


FIG.2. The deep learning teaching general process model

Each model part constitutes a complete deep learning process and plays an irreplaceable role in realizing deep learning teaching. Attention and expectation, activation of prior knowledge, and selective perception are all general processes in deep learning teaching activities, which can provide a knowledge basis for implementing deep learning teaching activities. The two methods of integrating knowledge and information and critical analysis start with the deep processing of new knowledge, which helps deepen the learners' understanding and mastery of new knowledge. Knowledge construction and knowledge transformation are necessary to determine whether deep learning can be realized. Learners' knowledge construction and concept transformation can be realized through assimilation or adaptation. In addition, it can also facilitate the change of learners' knowledge, improve basic skills through various exercises, and discover deep learning at lower levels. In addition, assessment runs through the whole learning process, ensuring the realization of deep learning by monitoring, adjusting, diagnosing, and summarizing the entire learning activity. Finally, migration, application, and creation embody the higher-order characteristics of deep learning and are challenging. These nine programs link and loop through the learning-teaching process.

According to this model, it can be concluded that deep learning teaching is different from

traditional teaching. There is a deep emphasis on the initiative, motivation, transfer, and application of learners' knowledge, which is an improvement over the deep learning teaching road map(Eric& LeAnn,2008). In this model, learners take the initiative to construct knowledge meaningfully and critically and learn new ideas and knowledge based on understanding. Besides, they use diverse learning strategies to process new knowledge and transfer and apply it effectively. In addition, through observation, it can be found that this model of deep learning teaching mainly includes three stages: the introduction stage, the main stage, and the evaluation stage. The introduction stage advocates a preliminary understanding of knowledge. The deep processing of knowledge and the transfer and application is supported in the main stage. The evaluation stage focuses on students' understanding and monitoring and adjusting their learning activities.

Compared with Eric and LeAnn's model, this model is also vital in dealing with knowledge. Establishing links between old and new knowledge is crucial to knowledge acquisition, highlighting the positive role of evaluation in teaching. In addition to emphasizing knowledge acquisition, it also pays attention to students' high-level thinking, such as critical thinking, creative ability, transfer application ability, and problem-solving ability. However, this model failed to focus on the importance of creating a positive learning atmosphere. Good teacher-student relationships and student-student

relationships are conducive to students' EFL reading deep learning (Zhang &Lu, 2018).

This model is very similar to reading teaching and is also in line with the concepts of reading teaching. Combining the advantages of this model with Eric and LeAnn's model will present better teaching effects of EFL reading deep learning teaching in high school. However, the above two models fail to mention the interaction among learners and between teacher and learners and fail to discuss the forms of teaching activities. Teaching activities play a crucial role in promoting deep learning teaching (Knud Illeris,2017).

IIc. The process and dimensions of deep learning teaching (Knud Illeris, 2017)

Knud Illeris proposed that learning is embedded in an individual and a social context. It has both individual and social attributes. Learning includes two distinct and active processes: One is the interaction between individuals and their environment; the other is the mental acquisition and processing process within individuals. Therefore, the design of learning activities to promote deep learning should benefit interaction, individual acquisition processing, collaboration, and communication with others. Students must gradually build up these abilities in actual problem-solving activities, not through teachers' teaching. Knud Illeris (2017) Outlines an overall framework for understanding individual learning processes, as shown in figure
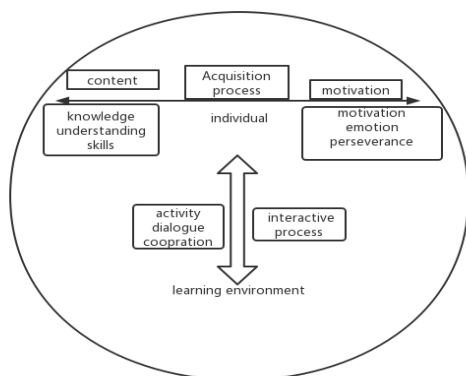
3.



FIG.3. Knud Illeris' process and dimensions of deep learning teaching

Knowledge acquisition and processing are influenced by content and motivation. Content and motivation are interactive dimensions between learners and the environment, mainly referring to the interaction between learners and their social and physical environment. Interaction can also be divided into two levels: interpersonal interaction with the surrounding environment, such as in the classroom or group; The other is the perception and interaction between individual learners and other learning resources and objects. Activities, dialogue, and collaboration define content elements in the interactive learning dimension. The Cambridge Handbook of Learning Science points out that embedding knowledge in highly situational natural scenes guides students to cooperate in exploring questions. It effectively promotes students' deep understanding, develops higher-order cognitive ability, and encourages knowledge transfer.

Compared with the deep learning teaching road map (Eric Jensen& LeAnn Nickelsen, 2008) and the deep learning general process model (Wu, 2014), this model emphasizes the need to stimulate students' active participation in deep teaching. However, they ignored the entire organization of knowledge and the connection between new knowledge and students' old knowledge and actual life experience. This model also emphasizes the core role of interaction in knowledge acquisition of deep teaching, which makes up for the deficiencies of the first two models in the design of classroom activities. The critical role of students' joint exploration is mentioned in this model. The teaching activities in deep learning, such as dialogue and group tasks, can promote deep learning and teaching. Interaction and cooperation among students and the interaction between teacher and students can effectively encourage students to build the foundation of core English literacy.

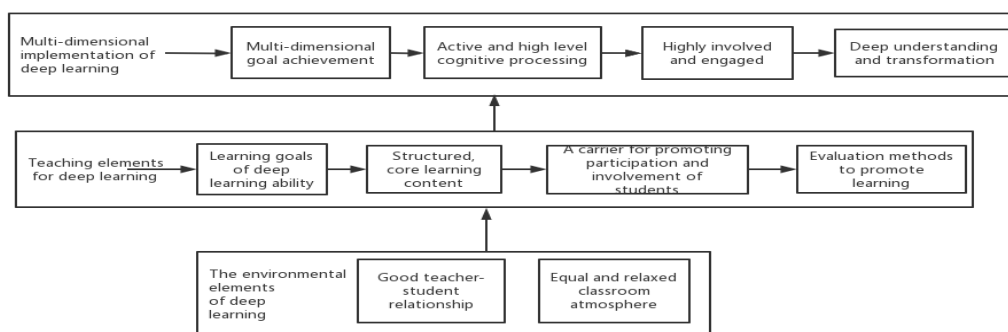IId. Instructional design elements of deep learning teaching (Li, 2020)

FIG.4. Instructional design elements of deep learning teaching(Li Jinyan,2020）

The deep learning teaching design elements (Li, 2020) include the environmental elements of deep learning, teaching elements for deep learning, and multi-dimensional implementation of deep learning. It clearly explains the deep learning teaching design from teaching content, teaching activity, teaching environment, and teaching evaluation. It emphasizes the application of critical thinking, active knowledge construction, and the transfer and application of knowledge. This instructional design is highly in accord with the connotation of deep learning and deep teaching, and also can help to develop students' EFL reading ability.

Overall, Instructional design elements of deep learning teaching (Li, 2020) are consistent with the above three models of deep learning teaching in constructs and concepts. This instructional design includes a teaching and learning environment ; Complete the teaching content deeply before the class and set a link between old and new knowledge; teaching activities focus on interaction, collaboration, and communication; evaluation; students' active involvement; the teaching with cultivating students' higher-order thinking ability,

problem-solve ability, transfer application ability.

## III. METHOD

The models mentioned above have been deployed in recent studies relating to EFL reading deep learning teaching in China. Articles published primarily during 2014-2022 were collected and reviewed from three major databases: China hownet, Google Scholar, and ERIC. The inclusion criteria are articles with keywords such as deep learning, deep teaching, EFL reading, and high school; articles that had adapted or adopted the suggested models in their respective studies; and the articles that used the diverse methodological approaches. The exclusion criteria are studies that do not look at EFL reading comprehension teaching in China; The articles on deep learning teaching focus on non-English subjects. Studies which not focus on EFL reading teaching. These articles were further narrowed down to fourteen articles that met the inclusion criteria in their entirety. The studies were classified based on their methodological diversity. Among them, 4(29%) studies used Li Jinyan's (2021) instructional design elements of the deep learning teaching model.

and 4 (29%) studies deployed Wu Xiujuan's (2014) deep learning teaching general process model. 6 (43%) studies applied Eric Jensen and LeAnn Nickelsen's (2008) deep learning teaching road map, respectively. Accordingly, 43% of the papers reviewed used the qualitative method, and 57% used the mixed method. Further, to date, there is no standard structure for narrative reviews. The ideal structure, however, is to follow the IMRAD format (Introduction, Methods, Results, Discussion) (Fredricks, 2016). The exact format is used in this paper.

## IV. FINDINGS AND DISCUSSIONS

The studies in this review provided a great source of information. Some of the main findings shall be highlighted and discussed in this section.

Table.1 A review of the main themes identified in this article is presented below.

| Major themes | |
| --- | --- |
| Student motivation | 29% |
| Student interest | 29% |
| Fully handle the teaching content | 29% |
| Pre-assessment of students | 50% |
| Establish links on knowledge and experience | 36% |
| Evaluation and reflection | 50% |
| Teacher's guidance | 36% |
| positive learning environment | 43% |
| Students' autonomous Learning | 36% |
| Cooperation and interaction | 43% |

Table.1 Major Theme

TABLE.2 demonstrates the major constructs identified along the course of this review.

| Major Constructs | |
| --- | --- |
| Teaching content | 29% |
| Teaching environment | 43% |
| Teaching activity | 71% |
| Teaching evaluation | 50% |
| Teaching objectives | 36% |
| Question design | 14% |

Table.2 Major constructs

TABLE 3 below presents a synthesis of all the relevant articles reviewed in this paper followed by discussions.

| Constructs | Author,year | Synthesis of Studies |
|---|---|---|
| Teaching contents | Luo Ling(2020), Li Fengling(2020), LinJinyan (2021), Ma Rui (2021) | The teaching content needs to integrate the old and new knowledge and build knowledge support for students to learn new vocabulary and grammar. The teaching content needs to incorporate the text content and life experience and build a content scaffold for students to learn new text content and ideas. Finally, the teaching content needs to integrate the cultural content at home and abroad to build a cultural scaffold for students to learn the cultural background of the text and compare the cultural differences between China and foreign countries. |
| Teaching environment | Liu Xiaohong (2019), Li Qing (2019), Liu Jia (2021), Hong Xiaocui (2019), Lin Jinyan (2021), Ma Rui (2021), Li Fengling (2020) | Fredricks (2015) believes that an effective teacher-student relationship affects students' learning engagement. The happy and active environment would be designed for real situations related to cultural stories to stimulate students' interest and motivation in English reading comprehension learning. |
| Teaching activity | Li Fengling (2020), Wang Dan (2021), Luo Qin (2021), Liu Xiaohong (2019), Luo Guiping (2021), Liu Jia (2021), Hong Xiaocui (2019), Luo Ling (2020), Guo Jianliang (2021), Zhang Wenjia (2018) | In different reading stages, designing various reading teaching activities can effectively promote students' deep reading, such as comparative, prediction, Asking questions carefully, discussion, reflection, and cooperative activities. |
| Teaching evaluation ans reflection | Li Fengling (2020), Zhang Wenjia (2018), Li Jie (2021), | Students' self-reflection can greatly promote students' EFL reading comprehension learning. |

| | Luo Guiping (2021), Luo Qin (2021), Guo Jianliang (2021), Hong Xiaocui (2019) | Evaluation includes three dimensions: teacher evaluation, peer evaluation, and self-evaluation. |
|---|---|---|
| Teaching objectives | Li Fengling (2020), Luo Guiping (2021), Zhang Wenjia (2018), Li Jie (2021), Luo Ling (2020) | When exploring reading objectives from the overall situation, teachers should make appropriate choices in the four dimensions of cognition, ability, thinking, and cultural orientation in combination with the text, learning situation, and teaching environment. Determine the key points and difficulties of high school EFL reading comprehension teaching objectives, then design reading teaching activities more pertinently. |
| Question design | Luo Qin (2021), Luo Guiping (2021) | The question is the carrier of the text, which can effectively combine knowledge, methods, thinking, strategies and emotions in EFL reading comprehension teaching. |

## V. CONCLUSIONS AND RECOMMENDATIONS

In conclusion, the literature review surmises that deep learning teaching design elements in EFL reading comprehension include environmental elements, teaching content elements, teaching activity, teaching evaluation, teaching objective aspects, and question design elements.

Environmental factors in EFL reading comprehension teaching are an essential ecological basis for deep learning (Li, 2019), including an excellent teacher-student relationship and a free, equal, cooperative, and safe classroom atmosphere. An effective teacher-student relationship affects students' learning engagement. A positive teacher-student relationship is significantly correlated with behaviour, emotion, cognitive engagement, and student's academic achievement, and specifically points out that teachers' support can make students perform better in the following aspects: Student participation, independent learning ability, working harder, more interested in learning, social skills, critical thinking, grades, Etc. Teachers and students create a learning atmosphere through formal and informal interaction, how teachers and students establish their perception of learning. This learning atmosphere significantly impacts students' learning (Li, 2020).

In designing teaching objectives, teachers need to grasp the relationship between teaching objectives of courses, units, every class, and subject competencies on the whole, so that each teaching section or unit becomes

a ladder to achieve core competencies (Luo, 2021).

Teachers need to transform the content of teaching materials into two aspects: first, transfer the abstract knowledge into learning content, which is beneficial to students' quality development; second is to transfer the learning content into specific teaching materials (Ma, 2021).

Teaching activities to promote deep learning should benefit interaction, individual acquisition processing, collaboration, and communication with others. Students must gradually build up these abilities in problem-solving activities, not through teachers' teaching (Li, 2020).

Evaluating and measuring students' deep learning requires a new evaluation system. From the review, the design of deep learning evaluation should follow the following principles: First, pay attention to evaluating higher-order cognitive skills. Second, evaluate interpersonal and personal abilities, such as communication, cooperation, complex problem solving, planning, reflection, and scientific research abilities. Third, the evaluation criteria can reflect the value of teaching. Teaching evaluation content and teaching objectives should have internal consistency. The evaluation of deep learning should encourage students to participate better in learning and teaching activities (Li, 2021).

Although the above review provides a reference for how to conduct deep learning

teaching in EFL reading comprehension, we need to study further and explore a more targeted teaching model for high school EFL reading deep learning in combination with the characteristics of subjects, students, and training objectives. Hence, studies should be conducted in the future to provide substantial empirical evidence concerning the effectiveness and efficacy of these models. Furthermore, additional research could help identify themes and patterns related to EFL reading deep learning teaching strategies. Most importantly, studies of such theoretical and practical significance can assist educational institutions, policymakers, educators, and researchers in China in improving EFL reading teaching strategies.

## VI. LIMITATIONS

Some relevant studies may not be included in the scope of review due to factors such as database selection, time constraints, and exclusion of non-EFL-themed studies. In addition, due to the nature of the narrative commentary, a broader perspective on the subject takes precedence over deep analysis.

## DECLARATION

We declare here that the article entitled "A Narrative Review of Deep Learning Teaching Models in High School EFL Reading Comprehension Teaching Design in China" Submitted to the Asian-Pacific Journal of Second and Foreign Language Education is original and has been carried out by the authors. All authors agree with the text and its submission. The results/data/figures in this manuscript have not been published elsewhere, nor are they under consideration

(from you or one of your Contributing Authors) by another publisher.

**Ethical Approval**

Not applicable

**Competing interests**

The authors have no competing interests that might be perceived to influence the results and/or discussion reported in this paper.

**Authors' contributions**

All authors have contributed.

**Funding**

Not applicable

**Availability of data and materials**

Not applicable

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