An Analysis of the Affordance Transformation Path in English Grammar Teaching Based on Ecological and Social Cultural Perspectives

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Abstract: The affordance of grammar teaching is the action possibility or opportunity that the learner perceives and the grammar learning environment provides. From the perspective of ecological and social cultural theory, the occurrence mechanism of grammar learning is the "perception-action" cycle of the interaction between the learner and the learning environment. Therefore, grammar teaching should pay attention to the effective transformation of environmental affordances. Against the background of information technology, the effective transformation of grammar teaching can be analyzed from three aspects: ecological task design, ecological network environment support and ecological learning community construction. The analysis results suggest that grammar teaching should focus on the implementation of overall teaching, pay attention to individual differences, and give full play to the initiative of students.

1. Introduction

The important position of grammar in the whole language teaching and learning is beyond doubt. However, in actual teaching practice, due to the influence of the teaching environment, evaluation standards and other factors, grammar teaching has been swaying between emphasis on form and meaning. Sometimes it pays too much attention to formal rules and fails to explore the functional value of grammatical structure in depth; sometimes grammar is ignored and only the communication of meaning is concerned [1]. The ideal grammar teaching is to provide learners with a broad learning platform, so that learners can master the way of using grammar while being exposed to different teaching forms, and achieve a high degree of integration between form and meaning. The current mainstream grammar teaching models, such as procedural teaching, interactive feedback teaching, and task-based teaching models, are all committed to achieving this goal. However, the matching of form and meaning does not necessarily lead to effective grammar

learning. The results of empirical research do not consistently prove that these methods can improve learners' language ability, and some even reach the opposite conclusions. This situation is closely related to the habit of conducting independent analysis of designated variables in isolation from the social and cultural environment in the past academic research of second language acquisition.

Second language acquisition based on ecological concepts tends to explore the relationship between people and the environment and between people. Grammar learning requires not only learning language theory, but also the learning of social environment and cultural customs. It is not only necessary to pay attention to the mastery of language theory in the minds of language learners, but also to pay attention to the social and cultural environment in which the language learners' thinking forms are located [2]

2. Theoretical Bases and Research Perspectives

A.Ecological affordance theory

The Theory of Affordances was first proposed by the perceptual psychologist Gibson in the article "The Theory of Affordances" in 1977 [3]. This formulation was enriched and supplemented in his monograph published two years later. [4] "Affordance" is a term related to the relationship between the environment and actors. It means that the environment provides positive or negative resources for animals and provides opportunities for organisms to take action. Different perceivers may take different behaviors for the same opportunity, indicating that the affordance is complicated. The action opportunity provided by the environment to the organism is an objective and limited set of possibilities. However, only when the information provided by the environment can be perceived by the organism can the actions of the organism be connected. Therefore, affordance can be divided into real affordance and perceivable affordance. Real affordance belongs to the nature of nature, exists as an objective fact, and has the nature of inducing the consciousness and behavior of the subject. However, the subject may not be able to accept it, and in some cases it will be affected by the subject's perceived intention and effectiveness. [5]

In the field of teaching, "affordance" can also show a series of processes that learners continue to dynamically adapt to the learning environment. Based on the theory of affordance, learning is a cyclical process in which the learner and the learning environment correspond to each other, with "perception-action" as the process. "Individuals are not creation, but discovery of affordances." That is to say, affordance is not a single entity element that exists objectively in the learning environment, but also contains the probability of the subjects (teachers and students) supported by the entity elements in teaching or learning activities. Also the level of this probability is not simply determined by the environment, it is closely related to the state of the teacher and the degree of the learner's perception of the affordance. With learners' adaptation to the learning environment and continuous improvement of learning effectiveness, learners can repeatedly perceive supplies, that is, better perceive information and exert their subjective initiative. Expert learners are significantly faster and more efficient in perceiving affordances in the learning environment than novice learners. [6]

In the field of language acquisition, Van Lier believes that learners perceive the external environment, interpret its content, and then take certain actions, which ultimately transform it into a positive or negative affordance [7]. Affordance is the conversion of learning resources and interaction opportunities acquired by language learners into positive or negative content through internalization and other behaviors in a specific environment [8]. The macro-affordance theoretical framework contains three elements: language users, environment, and language supply are produced by the interaction of the three [9]. At the micro level of language users, the continuous interaction between perception, interpretation and action forms a cycle. Language users will

perceive the learning opportunities and interactive platforms provided by the learning environment, analyze them, and then carry out relevant language learning behaviors and turn them into affordances. If language learners adopt a positive attitude, they will perceive and analyze the language learning support in the environment, and use it to actively carry out language learning activities. Based on this, Van Lier proposed that the evaluation object of the language affordance survey is not language input, but the content that learners perceive and comprehend in the learning environment that has a positive effect on language learning, including learning resources, activity opportunities, etc. [10] Because each learner has a certain degree of difference, the form and state of their transformation of affordances are also different from each other. The effective affordance for a certain learner may not be effective for others; the same affordance may have different effects in different environments; for the same person, the transformation of affordance in different situations will also be different. [11]

B.Sociocultural theory

Sociocultural Theory is a theory about how people's cognition develops. [12] The theory believes that human mental activities are essentially social, and the development of human cognition is the result of the continuous interaction between the individual subject and the social, cultural and historical environment (or object) in which it is located, and the interaction does not happen directly. What connects the two and promotes its development is the tool and its intermediary effect [13].

Activity theory supplements three activity elements, namely community, division of labor, and rules. The three elements are related to each other, and together with the intermediary tool, they adjust the subject's actions against the object to achieve the cognitive goal (result). Around the concept of "activity", the subject, object and intermediary tool form an organic activity system. [15] In this system, the subject (such as foreign language learners) is the active individual or group, the activity is the effort of the subject to achieve specific cognitive goals, and the object (such as learning content, tasks, and "problem space") is the object operated by the subject, [16] and transformed by the subject into specific cognitive results (such as language ability development). A community is composed of several individuals and groups that share objects (such as students, peers, and teachers); intermediary tools include all material and psychological tools in the process of transforming objects into results; rules are provisions, standards or contracts of statutory activities (such as syllabus, task requirements, teacher-student relationship, etc.); division of labor is the assignment of tasks and functions of community members (such as teacher-student role assignment). [17] The concept of mediation and activity theory not only clarify the nature of social activities of cognition and learning, but also establish an epistemological connection between socialcultural theory and foreign language learning activities, which helps to examine and understand the nature and process of foreign language learning from a new perspective. [18] These concepts and theoretical frameworks have similar explanatory power to the nature of the development of grammatical competence, such as social activities, which are composed of language learning actions and interactive learning opportunities referred to by the theories and definitions of affordance; cultural artifacts are the learning resources in the concept of affordance, which refers to language learning resources such as technology and books, as well as teachers' comments on group work and the language spoken by peers. However, social concepts can be regarded as an interpretation element in the theory of affordance, that is, the understanding of the role of learning resources and interactive learning opportunities provided by language courses. All language affordances are regulated by society. [19]

3. An Analysis of the Transformation Path of Affordance in English Grammar Teaching

Kirchner et al. divide teaching affordances in the context of information technology into three categories: educational, social and technical affordances. [20] The educational affordance is also called the affordance of teaching, which indicates the ability of the environment to support teaching and learning, or the relationship between the attributes of the educational intervention (pedagogy) that promotes the occurrence of specific learning and the characteristics of learners; social affordance refers to the social interaction properties of the environment, which is closely related to the social interaction of learners; technical affordance refers to the relationship between information technology and people's use of them. [21] Based on the classification of Kirchner and others, and under the care of ecology and social cultural theories, the researchers analyze the ways of affordance transformation of English grammar teaching from ecological task design, ecological network environment support and ecological learning community construction.

A.*Ecological task design*

Tasks are series of activities that are related, differentiated, sequential, and used to solve a certain problem. The completion of the task is closely related to the ability of language learners to use knowledge for communication in the learning environment. [22] Under the care of ecological affordance, the effectiveness of task design is reflected in the task can provide learners with perceivable action opportunities, guide students to achieve learning goals step by step, internalize knowledge and experience through externalized cultural practices, and enhance the sense of learning effectiveness. The key to task design is how to use this virtuous cycle of "perception-action" to promote the sustainable development of language ability.

The current mainstream task design is divided into input/interaction theory and cognitive theory. Among them, the input/interaction theory proposes that in the process of learning grammar, language learners need to receive a large amount of intelligible input, and the means to convert the input content into intelligibility is meaning negotiation; cognitive theory believes that language learners In the learning process, attention and concentration can be exhausted, and it is impossible to focus on multiple goals at the same time. Therefore, the performance of the task should be measured from three aspects: accuracy, fluency, and complexity. Both of the theories regard the task as a tool to promote communication rather than an environment for language development, so they pay insufficient attention to the external environment of language learning and different variables in the learning process, which leads to neglect of the systematic nature of the task. If a complete system cannot be established between tasks, the lack of systemicity will make the teaching system chaotic and lack logic. [23] Therefore, grammar teaching needs to establish a close relationship before and after the content to create a "task ecosystem", so as to provide students with better grammar learning ecological affordance, "perception-action" effective conversion and continuous development of cognitive ability.

The goal of "ecological" task design is to establish an ecological language learning atmosphere with both macro and micro levels, so as to create an ecosystem of the relationship inside and outside the classroom, the relationship between tasks and tasks, the relationship between teachers and students, the relationship between students and learning, the relationship between students and tasks, and the relationship between social and cultural environment. Among them, the ecosystem between tasks is a macroscopic view that focuses on the connection between different tasks and the systemicity of tasks in the designated teaching cycle. Language teaching should not only pay attention to the communication between students and teachers in the classroom, but also encourage students to exert their subjective initiative outside of class and carry out independent and cooperative learning. Whether in the classroom or outside the classroom, students and students, teachers and students have formed different modes of interaction systems around tasks. As the guide of classroom teaching, teachers should actively participate in the interactive learning of students as answerers to students' questions, so as to promote students to actively carry out language

learning. At the same time, students can also use a series of other resources and methods in the social environment to explore learning problems to create a language learning ecosystem from a micro perspective. [24] In view of this situation, it can be concluded that the emergence of ecological tasks can effectively promote students to explore knowledge points independently, so as to achieve seamless connection and communication inside and outside the classroom. First, we can start by digging and thinking about problems, and then obtain relevant information in order to collect the received information to make the information comprehensively sorted and analyzed, and highly integrated through various channels in the social and cultural environment (such as seeking help from teachers, discussing with other students, using the Internet and books to find answers), and finally output the content that is mastered until the task is completed. This series of processes is to encourage students to actively carry out language learning in the process of providing adequate "affordances" for language learning. In this process, different links are integrated, interrelated, and mutually promoted. [25] This form can be continued in future tasks and activities to create an ecosystem of linguistics from a micro perspective. This task design aims to help learners improve the quality of language output, while promoting the autonomy and initiative of language learning, and promoting the continuous development of the "perception-action" cycle to advanced levels.

B.Ecological network environment support

In the network age, network resources provide learners with conditions for ubiquitous learning, and the ecological design of learning tasks must not ignore the network environment affordances. Learning occurs in the process of interaction between the learner and the learning environment. The process from perception to action is an important process for learning. Learners need to play their subjective initiative, perceive relevant content from the environment, and discover actionable information from the perceived relevant content. In the cycle of perceiving action, the learner's own effectiveness will gradually be improved. What the learner perceives in this process and can provide clues for action is the perceivable affordance. Actions based on the learning environment and actions that may occur are real affordances. A practical system needs to meet two standards, namely, necessary functionality and a high level of practicality. Among them, functionality is the role that the system can provide, while practicability refers to the ability of the system to promote efficient processing tasks for users. It can be seen that affordances are not within reach of food, but affordances can make the content better perceivable by learners. The technology acceptance model can provide the theoretical basis needed for the affordance of the network environment. This model theory proposes that people's views and attitudes toward a certain technology will affect their behavior and attitude towards this technology, and the behavior and attitude ultimately determine the probability of people applying this technology. Two core pre-variables are set in the technology acceptance model theory, namely perceived ease of use and perceived usefulness. These two variables are used to explain people's attitudes towards a particular technology and the probability of its possible use. [26] The ecological design of the Internet learning environment needs to achieve a balance between ease of use and usefulness. Through in-depth analysis of learners to create relevant affordances for learners to improve their usefulness; design for ease of use by designing relevant information that can be used to indicate affordances; in the design process, a series of characteristics related to expected learning behaviors should be prominently emphasized, so that affordances are more easily perceivable, so as to continuously improve the usability, vitality and interactivity of the learning environment, and further sublimate the learning experience of learners. [27]

4. Teaching Enlightenments

A.Implementing holistic teaching

The affordance fully demonstrates the close relationship between the learner and the learning environment and the dynamic process of continuous development. The concept of affordance can be distinguished from the perspective of ecological psychology and the linear cognitive model. Among them, the linear model pays more attention to a single aspect of the learner or the learning environment. It treats learners and the learning environment from a static and independent perspective. The affordance is to explore the connection between learners and the learning environment from a holistic perspective and the concept of continuous development. The theory of affordance has always been from the perspective of mutual influence and interrelation between the two, and regards teaching as a whole, fully highlighting the process of interaction between the learner and the learning environment. Based on this, grammar teaching cannot be carried out in isolation, and output-oriented project-based teaching is a way to try in practice.

B.Paying attention to individual differences

The transformation of affordances varies from person to person. Different English proficiency, learning style, personality characteristics, etc. can all mean that the environment that students perceive is not the same, and different perceivers may take different behaviors for the same opportunity. Therefore, in teaching, it is necessary to pay attention to the different characteristics and personality differences of students, create practical opportunities suitable for different individual abilities, and devote ourselves to developing each student's superiority and potential. At the same time, interactive teaching of "heuristic, inquiry, discussion, and participatory" should be actively adopted to help students learn to learn in the social ecosystem and increase classroom participation and frequency of interaction.

5. Conclusion

The affordance of grammar teaching is the opportunity that learners perceive to interact with the environment. Under the view of ecological affordance theory and socialcultural theory, the occurrence mechanism of grammar learning is the "perception-action" cycle of the interaction between the learner and the learning environment. Therefore, grammar teaching should pay attention to the effective transformation of environmental affordance. In the context of informatization, the effective transformation of grammar teaching affordance can start from three aspects: ecological task design, ecological network environment support and the construction of an ecological learning community.

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