English Autonomous Learning Platform with Constructive Teaching Mode

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Abstract. This teaching reform mainly uses the advanced modern education technology to promote the English teaching based on the network technology. This is the inevitable result of the development of modern information technology. This paper mainly studies the design and implementation of English Autonomous Learning Platform Based on constructive teaching mode. Through the existing neuron model, it studies the individual needs of "teaching" and "learning", and puts forward a constructive autonomous learning mode based on RBF algorithm to realize "both learning and teaching". We should try our best to give full play to the leading role of teachers and fully reflect the cognitive main role of students. We should pay attention to both teachers' teaching and students' learning, and mobilize the initiative and enthusiasm of both teachers and students.

Keywords: Constructivist teaching · Neuron · RBF · English autonomous learning

1 Introduction

With the continuous development of English autonomous learning theory, student-centered teaching research has become a hot spot in the field of educational technology. If it goes on, autonomous learning platform is inevitable.

We can carry out the research and development of the courses online, and we can also publish the contents of the existing courses on the Internet. This platform regards the Internet browser as the development environment client of our course. For course creators, WebCT is the best tool that can provide them. These creators can easily use this platform to create, reuse or improve some courses and their contents [1]. All of the above operations can be implemented in a relatively simple and user-friendly mode of development. It is very simple and efficient to implement all operations such as course design and release by WebCT platform. Teachers can have sufficient time to improve the course content, display their talents, and guide students with pertinence and purpose [2].

At present, the relatively popular general network teaching platforms in China include Tsinghua Education online, 4a, network ladder teaching management platform,

Anbo online, TVU online, etc., while in foreign countries, ukeu, WebCT, frontier, blackboard learning space and so on are 131 [3–5]. These international online teaching platforms can not fully meet the actual teaching needs of domestic English teaching platforms, Many of the domestic network teaching platforms are some teaching institutions or software manufacturers simply transplant the teaching content and their own resources or courseware to the network, without considering the unified application of all the technical platforms or teaching functions. In contrast, due to the absence of large-scale learning of non-native language skills as in China, foreign online teaching platforms are basically unable to adapt to domestic teaching. This puts forward new requirements for the application of network technology and English teaching methods in China (see Fig. 1).
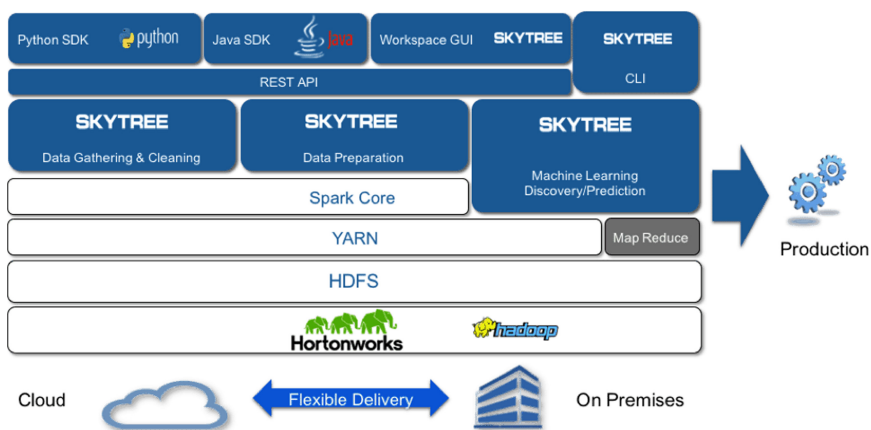

Fig. 1. Autonomous learning platform

2   Constructive Teaching Mode

2.1   Classification of Teaching Mode

In English teaching mode, there are still various problems in the past and present advantages. There is no perfect teaching mode, the optimization of teaching mode is always relative, after all, it is impossible to give an absolute ideal scheme. For a long time, there is no independent English teaching program in China. The design and implementation of English mortar main learning platform based on constructivist teaching mode are modeled on foreign teaching mode, which is worthy of filling. According to China's national conditions, combined with its own actual situation, the teaching mode with Chinese characteristics should be innovated [6]. The optimization of teaching mode must also start from the domestic national conditions and Chinese characteristics, and fully combine the characteristics of pedagogy, psychology and English discipline. Teachers should form full interaction with students, and integrate learning psychology harmoniously to achieve the ideal teaching effect.

2.2 Constructive Teaching Mode

The teaching mode of the teaching structure of "paying equal attention to learning and teaching" mainly includes individual tutoring mode, lecturing mode, exploring learning mode, discussing learning mode and cooperative learning mode. The teaching plan mainly focuses on "learning environment" and "autonomous learning strategy" [7]. The former is to provide the necessary environment and conditions for students' active construction (external factors of learning); the latter is the core content of the whole teaching design, which is to stimulate students to construct the meaning of knowledge independently (the internal cause of inducing learning) through various learning methods. There are three design objects of instructional design: learning environment, learning activities and media transmission, and these three design objects have hierarchical relationship. Design learning activities must be treated as the core content of teaching design. The design of learning activities is ultimately embodied in the design of learning tasks. The design of learning environment is mainly reflected in the combination of learning tools and learning resources by specifying the task objectives, activity contents, achievement forms, activity strategies and methods to promote learners' internal cognitive quality and thinking, so as to achieve the purpose of developing learners' psychological ability. The task of media communication design is to customize what kind of media form, what kind of organizational form, and what kind of presentation order to convey information to learners. The design of classroom teaching and the development and design of teaching media materials belong to this level of activities [8–10].

3 College English Learning in the Network Environment

The media of network science is the presentation form of computer information, which is completely different from the traditional classroom. It shows the characteristics of electronic multimedia, such as massification, diversification, visualization and three-dimensional. This is especially required for the study of College English. The support of Internet for College English learning shows a series of advantages [11].

3.1 Provide More Practical Opportunities for College English Learners

College English learning needs a certain intensity of skill training, and the training density of students is directly proportional to the improvement of a certain ability [12]. In the traditional classroom, due to the limitation of the number of students, teaching time and teachers' energy, this kind of skill training is relatively insufficient, and the network teaching software can replace the work of teachers, overcome the defect that the traditional classroom model can not increase the time and intensity of listening and speaking training, and students can carry out unlimited training on their ability according to their own needs [13].

3.2 Equal Communication on the Internet Is Conducive to Improving Students' Listening, Speaking and Expressing Abilities

As a kind of language ability learning, College English learning needs to be acquired in a certain natural environment or situation. One of its purposes is to narrate things and

express ideas in language, so as to achieve the goal of developing students' intelligence and cultivating students' ability. Under the traditional teaching mode, creating a good college English language environment is a key and difficult point in Teachers' teaching. The traditional methods include setting up extracurricular activity groups, English story club, reading or report Club (which can cultivate students' listening and speaking ability, but focus on imitation and performance), "English corner" (the most successful way to create language environment among the existing methods). Its advantages are that the content and object are relatively open, the sense of reality is strong, the ability to put learning in fun, and the ability is appropriate; The biggest disadvantage is: in a completely real language environment, students with shy and introverted personality can not participate, resulting in some students with strong desire for performance have stronger and stronger language control ability, while the other students have less and less words due to inferiority, so it is difficult to improve their language application ability. The use of network technology to establish a virtual language environment as a supplement to the real language environment will be conducive to the cultivation of all students' listening and speaking ability [14].

3.3 Rich and Authentic Network Resources Are Conducive to Creating a Real Language Learning Environment

(1) The network environment can provide a large number of authentic language materials, to a certain extent, to overcome the disadvantages of the lack of authentic language environment for College English learners. The language carrier of picture, text, sound and image and multi form information input provided by multimedia, such as background knowledge and vocabulary examples with film and television effect, not only make the teaching content rich and colorful, but also make the teaching more vivid, three-dimensional and vivid, which can greatly stimulate learners' interest and memory, and improve learning efficiency [15].

(2) College English teaching as a language course, the most ideal is to use native English speakers as teachers. But the vast majority of schools still can't do this. Even in the key universities with relatively strong economic strength, the number of foreign teachers is limited. Multimedia can make up for this by adopting the standard pronunciation of native English speakers, which overcomes the personal differences of Chinese teachers in pronunciation, It also enables all students to hear the pure pronunciation and intonation of native speakers throughout the learning process, which is very helpful for strengthening students' listening, adapting to the speed and intonation of foreigners, and training students to be familiar with and issue standard pronunciation.

(3) Foreign language learning needs an effective environment for language learning and use. Most of the language exercises in the classroom are carried out in hypothetical situations. Students often learn language for the sake of learning language. On the Internet, students can directly order English movies. Satellite TV English programs and English teaching reference films can communicate with teachers and even native English speakers in English. This kind of language environment is conducive to consolidating students' language knowledge and improving their communicative competence [16].

In short, the network constructs a self-regulation mechanism for learners, which is in line with the teaching framework based on the input and output of language information. In this real, open and interactive teaching environment, students can actively participate in the whole teaching process for autonomous learning [17].

4   Research on the Characteristics of Autonomous Learning Based on Neural Network

Neuron is the basic unit of neural network. It is imitated from biological neuron. The characteristics of neurons determine the overall characteristics of neural networks in a certain program. Many simple neurons are interconnected to form a neural network. A very classical neuron model with input of n-dimensional function is shown in the Fig. 2.
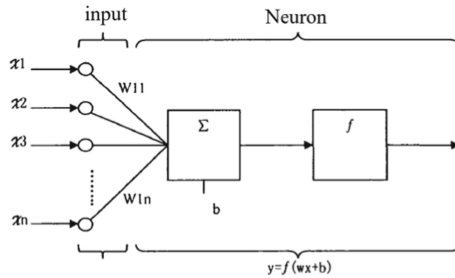

Fig. 2. Neuron model.

$x_1, x_2 \ldots, x_n$ represents n inputs of neurons. It is expressed by $n \times 1$ column vector X.

$$X = [x_1, x_2, \ldots x_n] \tag{1}$$

The weight of network and the corresponding threshold of network can be changed. It is a kind of adjustment based on the dynamic aspect of the weight of the neural network and a threshold value corresponding to the weight value that makes our neurons and even our neural network show a certain behavior characteristics. Therefore, the adjustable characteristics of weights and thresholds of neural network are the basic connotation of the characteristics of neural network learning.

5   Design and Implementation of Learning Platform

5.1   System Overview

The wooden platform is a software platform for English learning based on campus network, which is based on various colleges of higher education, vocational education and general education. The platform comprehensively designs the main scenes in the

process of English teaching, including classroom teaching, autonomous learning, communication between teachers and students, unified examination, resource management, educational administration management, etc. According to the teaching scenarios mentioned above, the platform can be divided into six English learning function modules, including information center, tutoring training, autonomous learning, online examination, listening and speaking training, and system management. The six learning modules can fully provide teaching, homework, practice, examination and evaluation functions for the teaching methods in the teaching link, meet the needs of different teaching objects, and provide convenience for school leaders, teachers, students and administrators. The design process of the learning platform is shown in Fig. 3 below:
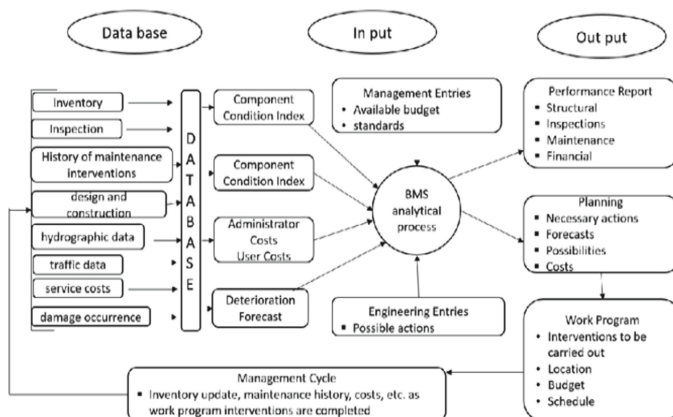

Fig. 3. Design flow chart of learning platform

In addition to learning texts, learners can also browse learning resources, use the tools provided by the platform, write their own blogs, learning experiences and learning plans, etc., make speeches, reply and modify their speeches in BBS, and select test questions from the question bank according to their own needs, You can view your own learning records, understand your own activity records in the learning support platform, and evaluate your own learning. In addition to the function of publishing texts, teachers can also add content and modify their own content in the learning resource database and test question database. In addition to an independent book or extracurricular, the added content can also enrich a certain knowledge point of others, or supplement multimedia materials. Managers manage BBS categories, moderator authorization, teacher identity confirmation, user permissions, teacher upload content audit. No matter what kind of users, they will first enter the landing interface of the platform. After landing, they can browse the course content. After students log in, the platform will automatically record their relevant information, such as landing time, landing times, browsing page times, etc., but learners can't publish courses and test questions. Only teachers can publish and manage courses and test questions. New users can register in the login interface by clicking the "new user registration" link button [18].

5.2   System Architecture Simulation

The overall architecture of the system is implemented by the platform based on modern computer network communication technology and multimedia technology [19, 20]. The platform closely integrates teachers, students and teaching resources, applies intelligent methods such as teaching methods and learning skills assessment to the teaching management process, achieves the organic integration management of various subjects (teachers, students, courseware, auxiliary), teaching mode (organization, management, evaluation, evaluation, strategy), teaching behavior, and shows the function of students' personalized learning and voluntary system In addition to the conventional examination, homework, audio and video on demand, autonomous learning test functions, the day ahead system also provides functions such as answering questions, situational teaching, interactive communication and oral pronunciation training. The system is designed and implemented in the English speaking center of constructive teaching mode, and the functions are logically divided according to teachers, students and managers, Users with different roles will directly enter their own virtual workspace after logging in (see Fig. 4).
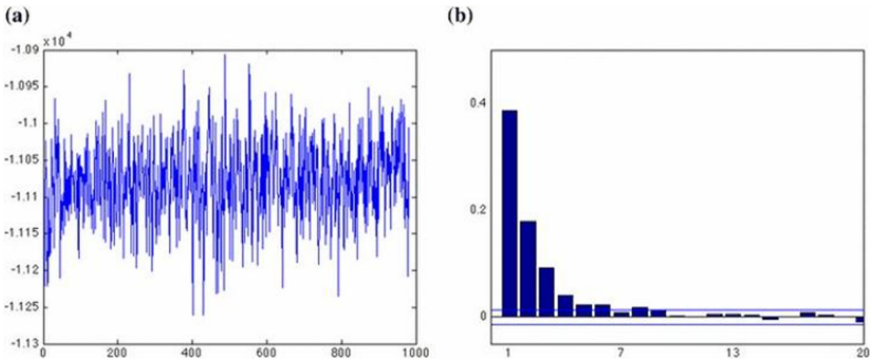

Fig. 4.   Teaching platform test effect

6   System Usage Evaluation

Item 3–11 mainly refers to the relevant evaluation of the platform by learners after using the platform. Among the evaluation of item 3, 83% of the learners choose to feel that the interface of the platform is concise, which indicates that the platform is recognized by most learners for its simple interface. At the same time, it also shows that learners care about whether the interface of mobile learning resources is concise, and 4% choose "uncertain", According to the survey, the main reason is that they don't understand the simplicity of the interface. Item 4 examines whether the structural design of the platform is reasonable and whether it brings convenience to learners. 46% of the learners choose "very good", which indicates that learners basically agree with this interface and interaction mode. Because the development of the platform is not perfect,

37% of them choose "general" and 17% choose "unreasonable", which indicates that the friendly interface and interaction mode of the platform still need to be corrected. Item 5 examined whether the individual test module in the platform could help learners improve their individual skills, 53% thought it was helpful, indicating that the module did help learners improve their individual skills; 19% thought it was not helpful, 28% thought it was uncertain. Item 6 examined whether the learners were interested in the recording function of oral English training on this platform. 67% of them said that they had used this function, which indicated that most of the learners were very interested in this function; 18% did not use this function very much, and 15% said that they had not used this function, which indicated that this function still did not attract them and needed to be improved. Item 7 examines whether the oral training of this platform is helpful to learners' oral practice. 51% of them think it is helpful, 27% think it is not helpful, and 22% think it is not helpful. This shows that this function has certain effect on learners' oral training, but there are also some shortcomings that need to be improved. Item 8 and Item 9 investigated the learners' utilization and satisfaction of the network resources of the platform. Among them, 73% often used these network resources, 17% seldom used them, 10% never used them, 49% were very satisfied with the network resources provided here, 23% were average, and 28% were uncertain. This shows that learners hope to have the support of learning tools when they carry out autonomous learning, However, the learning resources of the platform need to be further enriched. Item 10 and item 11 investigated the rationality and effectiveness of the design of the learning evaluation module of the platform. Among them, 53% thought it was reasonable, 24% thought it was general, and 23% thought it was unreasonable; 48% thought it could promote their learning, 28% thought it was general, only a little promoting effect, and 24% thought it was not helpful, which indicated that it was very important to do a good job in the learning evaluation of the autonomous learning platform. As shown in Fig. 5 below.

Item	Statement	Strongly disagree	Disagree	Agree	Strongly agree
1	"If I sufficiently practice English pronunciation, I will be able to master a native-like accent."	6 (5.17%)	19 (16.38%)	**59 (50.86%)**	32 (27.59%)
2	"It is important to understand varieties of English, e.g., Indian English, Singaporean English, Chinese English, etc."	12 (10.34%)	20 (17.24%)	**57 (49.14%)**	27 (23.28%)
3	"The feature that causes miscommunication in English the most is a non-native accent."	31 (26.72%)	**41 (35.34%)**	36 (31.03%)	8 (6.90%)
4	"I am proud of my own English accent."	21 (18.10%)	**45 (38.79%)**	31 (26.72%)	19 (16.38%)
5	"It is important to acquire native-like competence in pronunciation."	11 (9.48%)	31 (26.72%)	**45 (38.79%)**	29 (25.00%)
6	"We should not tolerate varieties of English that differ from native speakers'."	31 (26.74%)	**61 (52.59%)**	14 (12.07%)	10 (8.62%)

Fig. 5. Feedback chart of system usage

7 Conclusion

This paper analyzes the research and application status of Web-based English autonomous learning platform at home and abroad, and analyzes the application of constructive teaching mode in English teaching process (learner testing, evaluating learners, arranging teaching plans, self-study, completing self-study assignments, retesting and evaluation process), This paper analyzes the application of traditional teaching methods in the process of computer multimedia network teaching (resource management, courseware management, personnel management, self-study status tracking management). According to the characteristics of the above analysis, the architecture of the platform is designed, and the software design specifications of relevant modules are formulated.

References

1. Yu, W., Xuezhen, Z.: on the construction of network teaching resources in Colleges and universities. Audio Visual Educ. Res. **06**, 54–56 (2004)
2. Sun, B.: Research on the management and application of network teaching in Colleges and universities. Audio Visual Educ. Res. **10**, 53–55 (2010)
3. Pang, W.: Some progress of foreign autonomous learning research since 1990s. Psychol. Trends **04**, 12–16 (2000)
4. Dong, N.: The enlightenment of autonomous learning mode in foreign universities. Foreign Lang. Teach. Res. Jiangsu **02**, 12–15 (2008)
5. Cao, H.: Application and research of blended teaching mode in College English teaching practice. Neijiang Sci. Technol. **42**(02), 149–150 + 152 (2021)
6. Yafeng, L.: Research on the construction of College English autonomous learning curriculum based on classroom style. J. Hubei Open Vocat. Coll. **34**(03), 186–187 (2021)
7. Dan, L.: New ideas of College English education reform based on network . Mod. Vocat. Educ. **06**, 208–209 (2021)
8. Runlu, Z., Yingxue, H.: Research on English autonomous learning of higher vocational students in the era of big data: a case study of Guangzhou Panyu Polytechnic . Sci. Technology Horizon **01**, 73–75 (2021)
9. Jia, L., Yuhong, Z.: Exploration and research on College English autonomous learning classroom from the perspective of mobile Internet – taking American education curriculum under Sino foreign cooperative education as an example. Sci. Technology Horizon **35**, 37–38 (2020)
10. Juan, F., Minfang, L.: Practice and effect evaluation of ubiquitous learning mode in College English listening class under the guidance of Poa theory . Campus English **49**, 16–17 (2020)
11. Tian, T., Yujian, L., Shasha, X.: An analysis of College Students' autonomous learning of English from the perspective of social cognitive theory . English Square **34**, 126–129 (2020)
12. Wu, J.: Construction of autonomous learning mode for English majors based on wechat platform. Overseas English, (21), 67–68 + 76 (2020)
13. Jiao, F.: Research on the hierarchical teaching of public English in higher vocational colleges based on MOOC . Chin. J. Multimedia Netw. Teach. (Zhongxun) **11**, 41–43 (2020)
14. Zhang, M., Li, X., Chen, Y., Xu, Y., Wang, H.: The study of mobile English autonomous learning of College English vocabulary under the background of "Internet plus." Comput. Knowl. Technol. **16**(31), 160–161 (2020)
15. Shao Xinjie, Y., Qingqing. : Applied research on College English autonomous learning mode based on wechat public platform. J. Jiangxi Electr. Power Vocat. Tech. Coll. **33**(10), 30–31 (2020)

16. Wenqin, H.: Research and Practice on the application and effect evaluation of autonomous learning platform – taking higher vocational public English as an example . Public Stand. **20**, 176–177 (2020)
17. Xu, M.: Typical problems and countermeasures of English autonomous learning in higher vocational colleges based on network platform. J. Yanbian Inst. Educ. **34**(05), 62–64 (2020)
18. Zhang, G., Hu, W.: Design of autonomous learning resource platform for English majors in independent colleges based on metacognitive strategy. Lang. Culture Stud. (02), 75–80 (2020)
19. Yu, Q.: Research on the construction of mobile learning platform for College English based on WeChat official account. J. Jiangxi Vocat. Tech. Coll. Electr. **33**(09), 37–38+40 (2020)
20. Ling, C.: Research on extracurricular learning training mode based on wechat platform . Sci. Technol. Econ. Guide **28**(26), 171–172 (2020)