

# An Empirical Study on Autonomous Learning of Learning Communities in the “Internet Plus” Era

Xinying An\*

Shandong University of Finance and Economics, Ji'nan 250014, Shandong, China

*\*Author to whom correspondence should be addressed.*

**Copyright:** © 2026 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

**Abstract:** This study focuses on how to construct a new model of college English autonomous learning in the “Internet Plus” era. By means of questionnaires, interviews and tests, it analyzes the role of learning communities in stimulating and cultivating students’ awareness of autonomous learning, as well as improving their autonomous learning ability and pragmatic competence. The empirical test shows that learning communities are conducive to students’ autonomous learning and have a certain promoting effect on college English teaching.

**Keywords:** Internet+; Learning community; College English; Learner autonomy

**Online publication:** March 17, 2026

## 1. Introduction

In 1995, educator Ernest Boyer first proposed the concept of “learning community”<sup>[1]</sup>. He believed that a learning community is an organization where all people learn together for the mission of the community and towards a common vision, and it is the inquiry, communication and collaboration carried out by its members to complete real tasks. Later, the learning community was widely studied as a learning model. In today’s “Internet Plus” era, various innovations have been created, which have greatly changed our work, study and life. The trend of “Internet Plus” is sweeping across China, and information-based education has penetrated into teaching classrooms at all levels. In the mode of “Internet plus Education”, educational informatization has become the main manifestation and core connotation of educational modernization<sup>[2]</sup>. How to make information technology better serve college English teaching has become an important issue. This study focuses on online learning communities and proposes how to construct a new model of online autonomous teaching for college English in the “Internet Plus” era.

A learning community is a democratic, equal and cooperative learning cultural environment<sup>[3]</sup>, which can be understood as “cooperative learning” in teaching. The best cooperative learning groups consist of four mixed-gender students, and groups of three are also acceptable. If the number of members is too large, it will lead to inefficiency and is not conducive to in-depth learning. Sufficient and frequent communication is an important

feature of the learning community and also a crucial foundation for cooperative learning<sup>[4]</sup>.

Based on the learning community model, autonomous learning is promoted in college English teaching. By designing an experimental English class under the autonomous teaching model and carrying out innovative teaching activities, members of the learning community are given the opportunity to obtain comprehensive help and learning support from the internal and external environments, so as to promote the achievement of excellent learning goals.

## **2. An empirical test of the autonomous learning model**

### **2.1. Research methods and procedures**

To verify the effectiveness of the autonomous teaching model based on the learning community, this study conducted a college English autonomous teaching practice, and carried out an empirical analysis combining tests and questionnaires. The specific procedures are as follows:

First, organize the members of the research team and the learning community participants to conduct in-depth study on the concept, characteristics and construction theories of the learning community, and integrate them into teaching and learning practices. Guided by the Deming Cycle theory in refined management<sup>[5]</sup>, this study is divided into four stages: Plan (defining objectives), which means the learning community establishes a shared vision; Do (mutual-benefit cooperation), which refers to creating a cooperative atmosphere, cultivating a sense of collaboration and improving cooperative skills; Check (dynamic feedback), which involves providing real-time feedback on internal and external conflicts and problems of the community; Action (system establishment), which is to internalize rules and regulations into teachers' and students' emotional experiences and behavioral consciousness, and transform them into their own needs and habitual behaviors.

Second, under the guidance of vision and objectives, construct a teaching model oriented to cultivating college students' autonomous learning ability and based on improving their language skills.

Third, design a questionnaire to investigate teachers' and students' familiarity with and willingness to apply this model, collect first-hand feedback data for analysis, identify existing problems and students' real demands, and explore solutions.

Fourth, set up an experimental class to carry out practical research and innovative teaching design. The research subjects are first-year undergraduate students. The experimental class and the control class use the same textbooks, have the same class hours, teaching tasks and objectives, with the control class adopting the conventional teaching model and the experimental class using the learning community-based model.

Fifth, carry out curriculum teaching research: members of the research team record teaching insights and students' learning status in real time; students write weekly learning journals and complete teaching summaries at the end of the semester; collect the learning evaluations of students in the experimental class through questionnaires, and conduct a comparative analysis between the experimental class and the control class.

### **2.2. Research subjects and experimental statistics**

This study selected 380 first-year undergraduate students from Shandong University of Finance and Economics in 2024 (from 8 teaching classes). Classes numbered 1, 3, 5, and 7 were designated as the experimental classes, while classes 2, 4, 6, and 8 served as the control classes. These classes used the same textbooks, had identical teaching hours, and shared the same teaching tasks and objectives. However, the experimental classes (191 students) adopted the learning community model, whereas the control classes (185 students) followed

conventional teaching methods. Two teachers acted as facilitators for autonomous teaching practice. In the experimental classes, each class was divided into 12 learning community groups, with each group consisting of 3-5 students, forming a total of 48 interest-based groups. These included 12 speaking and listening groups, 12 translation and writing groups, 12 reading and audiovisual groups, and 12 comprehensive interest groups. The autonomous teaching experiment lasted for one academic year.

To ensure the validity of the study, a homogeneity test was conducted on the eight natural classes before selecting the experimental classes. Mathematical and statistical analysis was performed on the academic performance of the experimental and control classes before implementing the different teaching models. The results showed that the scores of different classes followed a normal distribution, and an independent samples t-test revealed no statistically significant difference ( $p > 0.05$ ), indicating that the subjects were homogeneous.

In the experimental classes, methods such as questionnaires, field observations, interviews, classroom observations, and tests were primarily used to collect textual, audio, and video data required for the research. Comparative analysis and exploratory investigations were conducted based on this data. Instructors, drawing on their professional experience and considering student needs, provided relevant English learning materials—such as audio recordings, videos, and electronic resources—to group members via the internet. They also organized and guided weekly study and discussion activities for the groups. A WeChat group was established to offer point-to-point guidance and solutions to difficulties encountered by the groups during their English learning process. After a one-year autonomous learning experiment, students’ English assessment results were analyzed and compared. Comprehensive data were statistically analyzed using SPSS software.

## 2.3. Research results and analysis

### 2.3.1. Statistical analysis of average scores between the experimental and the conventional class

**Table 1.** Statistics of members in learning community groups of the experimental class

	Case					
	Included		Excluded		Total	
	N	Percentage	N	Percentage	N	Percentage
Class 1	48	100.0%	0	.0%	48	100.0%
Class 3	47	97.9%	1	2.1%	48	100.0%
Class 5	50	100.0%	0	.0%	50	100.0%
Class 7	46	100.0%	0	.0%	46	100.0%

**Table 2.** Score statistics of learning community groups in the experimental class

	Class 1	Class 3	Class 5	Class 7
Mean	84.71	86.30	88.96	84.75
N	48	47	50	46
Standard Deviation	3.557	3.430	3.605	3.223

**Table 3.** Student statistics of the control class

	Case					
	Included		Excluded		Total	
	N	Percentage	N	Percentage	N	Percentage
Class 2	48	97.95%	1	2.05%	49	100.0%
Class 4	44	97.77%	1	2.23%	48	100.0%
Class 6	47	97.91%	1	2.09%	48	100.0%
Class 8	46	100.0%	0	.0%	46	100.0%

**Table 4.** Score statistics of students in the control class

	Class 2	Class 4	Class 6	Class 8
Mean	80.21	82.38	83.05	79.41
N	48	44	47	46
Standard Deviation	5.562	6.418	5.241	4.773

As can be seen from **Tables 1–4**, the average scores of the learning community groups in the experimental class were generally higher than those of students in the control class. The scores of all samples conformed to the general law of normal distribution. The sample standard deviation of the learning community groups in the experimental class was smaller than that of the control class, indicating that the performance levels of the experimental class groups were more consistent overall with smaller differences, whereas the performance differences among control class students were more significant. This fully aligns with the expected objectives of teaching activities under the learning community model.

### 2.3.2. Statistical analysis of comprehensive average English scores by group

**Table 5.** Statistics of average scores of each group

	N	Minimum	Maximum	Mean	Standard Deviation
Group Average Score	48	77.33	95.50	85.79	3.84
Valid N (listwise)	48				

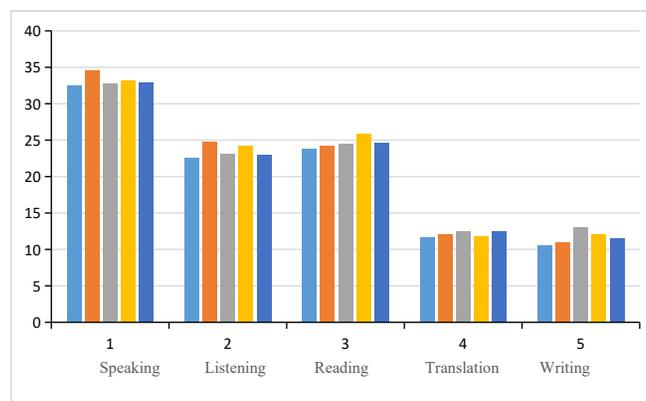
As is shown in **Table 5**, among the 48 learning community groups, the average score reached 85.79, with the highest score hitting an unexpectedly impressive 95.50, while the lowest score stood at only 77.33. The standard deviation of the sample's normal distribution was 3.84. The average scores of the community groups were higher than those of all control classes, indicating that the autonomous teaching model implemented in the experimental class has yielded remarkable results.

A One-Sample Kolmogorov-Smirnov Test was conducted to assess whether the distribution of group average scores was normally distributed. The sample had a mean of 85.79 and a standard deviation of 3.84. The test yielded a significance value of 0.960, which exceeds the conventional threshold of 0.05. As a result, the null hypothesis of normality was retained, confirming that the group average scores are consistent with a normal distribution. This satisfies the normality assumption required for subsequent parametric statistical analyses.

### 2.3.3. Statistical analysis of average scores in English individual items by group

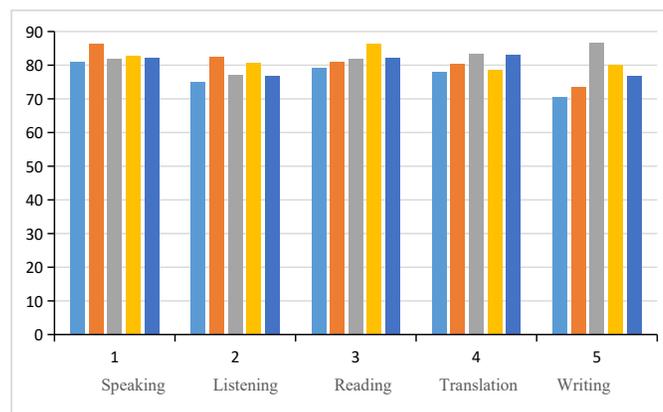
**Table 6.** Statistical analysis of average scores in English individual items by group

Assessment Item	Control Group Average Score	Experimental Group Average Score			
		Speaking and listening	Translation and writing	Reading and audiovisual	Comprehensive interest
Speaking (Full score: 40)	32.45	34.56	32.79	33.15	32.89
Listening (Full score: 40)	22.52	24.77	23.09	24.22	23.02
Reading (Full score: 30)	23.78	24.25	24.54	25.89	24.67
Translation (Full score: 15)	11.68	12.06	12.49	11.77	12.45
Writing (Full score: 15)	10.56	11.03	12.98	12.02	11.50



**Figure 1.** Statistical analysis of average scores in English individual items by group.

The performance of different experimental groups across various English assessment items is presented in **Table 6** and **Figure 1**, and the key findings are as follows: First, compared to the control group, all experimental groups showed varying degrees of improvement in average scores across all assessment items, which confirms the overall effectiveness of the teaching reform. Further analysis reveals that the autonomous teaching activities implemented in each experimental group were highly positively correlated with the improvement of their respective single-item scores, and were particularly effective in boosting absolute scores in speaking, listening, and reading comprehension.



**Figure 2.** Statistical analysis of average scores in English individual items by group.

After conversion to a 100-point scale, the statistics of the average scores of each group in individual English items are shown in **Figure 2**. It can be seen that through autonomous learning, the English writing item has the largest room for improvement and the most direct effect. Although the comprehensive interest experimental group is inferior to each specialized group in terms of the improvement of absolute scores, it has shown an improvement in overall English proficiency across all items. If members of the learning community can choose to transfer from the comprehensive interest group to other specialized experimental groups based on their strengths and weaknesses in individual English learning, giving play to their advantages or making up for their deficiencies, they will undoubtedly achieve substantial progress.

### **3. Several enlightenments for teaching**

In the era of “Internet+”, this study explores how to promote collaboration and learning among members of a learning community by constructing a new model of autonomous college English teaching. Through surveys, experimental designs, and sustained systematic teaching practices, it investigates how establishing a learning community can help students develop autonomous learning concepts and enhance their abilities in self-directed and cooperative learning. This project represents a bold reform and exploration. Based on the “Deming Cycle” (PDCA) from the theory of refined management, a new teaching model is designed in four stages. Through autonomous teaching practices, students’ self-learning abilities and pragmatic competence are improved. The following research findings are available for reference.

#### **3.1. Interest is the best teacher for students**

It can be said that interest is the inexhaustible driving force of learning and the best teacher for students. Only when students are interested in a certain area of learning will they be motivated to take action. In the initial stage of the autonomous teaching design, different learning community groups were formed by categorizing students according to their diverse learning aspirations and interests. Within these groups, members communicated, exchanged ideas, negotiated, and utilized learning resources and tools to engage in collaborative inquiry-based learning. They actively constructed meaning and knowledge, thereby achieving their learning objectives. After one academic year of autonomous teaching experiments, students made progress beyond conventional levels in their respective fields of interest—such as spoken English and listening, translation and writing, reading and film studies, and comprehensive interests—to varying degrees. Teachers’ guidance in nurturing the interests of the learning communities also played a supportive role.

#### **3.2. Teachers should proactively embrace role transformation**

The internet has transformed the traditional teacher-centered teaching model. Teachers are no longer the sole source of knowledge, and students’ dependence on in-class lectures delivered by teachers has been significantly reduced<sup>[6]</sup>. Teachers are guides and participants in autonomous teaching activities based on learning communities. In the process of autonomous learning experiments, how teachers accomplish their own role transformation is particularly important. On the one hand, teachers must proactively shift from their role as “authorities” and “knowledge transmitters” to become guides and facilitators of learning activities.

Teachers are both organizers and participants in learning activities. They should transform into “expert learners” on an equal footing with students, exploring and learning together with them. Additionally, teachers should provide necessary and timely assistance to learning communities facing difficulties in autonomous

learning. Finally, teachers should also act as researchers in autonomous learning experiments, continuously studying teaching subjects, content, activities, and pedagogical principles. In today's era, with the rapid development of scientific theories and ever-changing information technology, teachers are faced with new challenges: they must possess broader knowledge reserves, keep pace with fast information updates, and master the use of new technological tools.

### **3.3. Internal and external collaboration within the learning community leads to mutual success**

The learning community in teaching is a fundamental learning collective composed of learners (students) and facilitators (teachers). It is centered around completing common learning tasks and aims to promote the comprehensive growth of its members (both students and teachers). Guided by an interactive learning perspective, it emphasizes mutual influence and enhancement through interpersonal communication, exchange, and the sharing of various learning resources. Its main distinction from traditional teaching classes and organizations lies in its emphasis on interpersonal psychological compatibility and communication, leveraging group dynamics in the learning process. A learning community fosters a democratic, equal, and cooperative learning environment, effectively supporting learners in achieving communication and interaction through computer networks. Group activities serve as a crucial organizational form of the learning community, fully embodying the collaborative nature of learning.

### **3.4. Designing pathways for individual development makes goals more attainable**

Respecting students' individuality and constructing their own development paths. Every student differs in physical and mental characteristics, cognitive traits, learning styles, cultural backgrounds, and other aspects. We should respect students' individual differences and satisfy the diverse learning needs of each student to the greatest extent possible <sup>[7]</sup>. The foundation of learning is based on the existence of differences. This is precisely why no designated leader is required in group learning. Instead of enforcing uniformity, we respect students' individuality, nurture their respective agency, strive for equal participation, and value a diversity of thoughts and perspectives. In personalized learning, every student is valuable <sup>[8]</sup>. The collision of different ideas and viewpoints among students can lead to a deeper understanding of issues. Furthermore, only when each student's agency is acknowledged can they treat each other with sincerity, mutual respect, and engage in cooperative negotiation, thereby creating an equal and democratic learning atmosphere and achieving genuine learning.

### **3.5. Proper use of online tools and learning resources maximizes efficiency**

The Ten-Year Development Plan for Educational Informatization (2011-2020) emphasizes: "Higher education informatization is an effective way to promote the reform, innovation and quality improvement of higher education, and it serves as the innovative frontier of the development of educational informatization" <sup>[9]</sup>. Against the backdrop of "Internet plus", the construction of college English learning communities is not only inevitable but also grounded in a solid practical foundation. Information serves as both an important educational resource and a crucial learning resource <sup>[10]</sup>. Within the learning community, teachers should make full use of networks and multimedia to create authentic learning scenarios, assisting students in contextualized learning. Students, on the other hand, must learn how to learn—actively utilizing cognitive tools such as search engines, translation software, and network devices to acquire knowledge, and employing resources like e-books, open online courses, and online platforms (e.g., language-specific data repositories) to actively construct meaning and linguistic

knowledge.

## 4. Conclusion

Through a one-year teaching practice and empirical analysis, this study explores the feasibility and effectiveness of constructing a new autonomous learning model for college English based on the concept of learning community in the context of the “Internet plus” era. The research results show that the learning community model adopted in the experimental class, through links such as setting shared visions, promoting reciprocal cooperation, implementing dynamic feedback, and establishing rules and systems, not only significantly improved students’ comprehensive English scores—especially their performance in individual skills such as speaking, listening, and reading comprehension—but also effectively narrowed the score gap among students and promoted the balanced development of the overall learning level. This confirms that the autonomous teaching model based on learning community can create a positive collaborative and continuous reflective learning culture, stimulate students’ intrinsic learning motivation, and enhance their awareness of autonomous learning and pragmatic competence.

The “Internet plus” environment provides technical support and expansion space for the operation of learning communities, enabling resource acquisition, communication and interaction, and personalized guidance to break through the limitations of time and space, further amplifying the effectiveness of cooperative learning. This study also provides an operable path for college English teaching reform: that is, through structured collaborative learning organizations, transform external teaching design into students’ internal learning practice, thereby realizing the transformation from “teacher-centered” to “student-centered” teaching.

Of course, this study was only carried out within a certain scope. In the future, the sample size can be further expanded, the experimental period extended, and attention paid to the learning differences of students with different disciplinary backgrounds or language proficiency levels to deepen the understanding of the operation mechanism of learning communities. In addition, how to use intelligent technology to optimize the interaction efficiency of communities and establish a long-term internal and external collaborative learning network are also directions worthy of further exploration.

In response to the above issues, the focus of future research will focus on the following directions: first, pay attention to the demand guidance in English teaching reform, and study how to create a lively and vivid English teaching ecological environment, how teachers and between teachers and students can build learning communities, and how to encourage teachers to participate in personalized and diversified practical research; second, strive to improve the professional quality and ability of English teachers in professional teaching, update their educational concepts, cultivate their professional ethics, expand their professional knowledge, and enhance their professional skills; third, promote mutual improvement between teaching and learning, build an English teaching development community, popularize the innovative achievements of autonomous teaching experiment reform, and create a variety of autonomous teaching environments with rich contents.

In conclusion, the in-depth integration of learning communities and “Internet plus” provides strong support for cultivating students’ autonomous, cooperative, and inquiry-based English learning abilities, and also offers a useful reference for the innovative development of college English teaching in the new era.

## Disclosure statement

The author declares no conflict of interest.

## References

- [1] Boyer E, 1995, *A Basic School: A Community for Learning*. The Carnegie Foundation for the Advancement of Teaching, Princeton, NJ.
- [2] Jiang L, 2023, Research and Practice on Online Teaching Reform Supported by Information Technology. *Journal of Jilin Agricultural Science and Technology University*, (1): 115–119.
- [3] Guo Y, 2012, The Theory of Learning Community and Its Enlightenment to English Teaching. *Journal of Liaoning Educational Administration Institute*, (1): 75–78.
- [4] Lai N, 2019, A Study on the Construction of Online Learning Communities for English Teachers in Application-Oriented Universities in the “Internet Plus” Era. *Journal of Higher Education*, (19): 156–158.
- [5] Deming W E, 2003, *Deming on Quality Management: Solving Chronic Problems of Organizations and Enterprises From a New Perspective*. Hainan Publishing House, Beijing.
- [6] Zhang Y, 2016, An Analysis of the Concept and Model of “Internet Plus Education”. *China Higher Education Research*, (2): 70–73.
- [7] Wang M, 2018, Theoretical Construction and Characteristic Research of Classroom Learning Communities. *Contemporary Education and Culture*, (3): 44–50.
- [8] Zhao Y, 2017, How Should We Be Teachers in the Future? *Moral Education China*, (11): 48–51.
- [9] Ministry of Education, 2012, *The Ten-Year Development Plan for Educational Informatization (2011–2020)*. *China Educational Informatization*, (8): 3–12.
- [10] Cheng P, 2024, A Study on the Construction of Mobile Learning Communities for College English Against the Backdrop of “Internet Plus”. *Journal of Jilin Agricultural Science and Technology University*, (2): 78–82.

### **Publisher’s note**

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.