

# A Study of the Cultivation of College Students' Learner Autonomy in the Multimedia Environment

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**Abstract:** The study first covered the literature review on multimedia assisted teaching, the theory of constructivism, and research on learner autonomy. Then, a 14-week experiment was conducted on 160 fresh students. Three findings were concluded from the research. First, a new learning environment for foreign language learning and teaching has been created with the assistance of multimedia technologies. Second, combined with those multimedia technologies, the constructivist theory, can greatly promote the students' learner autonomy. Third, strengthening the learner autonomy will contribute to the improvement of students' English proficiency. The study ended with some measures on how to cultivate college students' learner autonomy in the multimedia environment: First, teachers should firmly take "students" as the center of teaching and "teachers" as the auxiliary. Second, teachers should change the traditional role as from the authority to the friends of the students. Third, teachers create a good environment for students' autonomous learning and promote their cooperative learning. Fourth, teachers should leave the students more free time for them to speak English, and evaluate their performance. Finally, teachers should teach students in accordance with their aptitude.

## 1. Introduction

Multimedia Learning Environment Survey is used to assess the students' and teachers' perceptions of learning environments which promote the use of multimedia programs and constructivist learning approaches. Kang (2007) thought, in the 21st century society, constructivism is highlighted in various fields related to education as an alternative educational ideology and approach [1]. Huang, et al. (2010) identified constructivist learning as the pedagogical engine driving the construction of Virtual Reality Learning Environments (VRLE) and discusses five constructivist learning approaches [2]. Yang, et al., (2010) found that by designing and developing a Physically Interactive Learning Environment, the PILE system, to integrate video-capture virtual reality technology into a classroom, the proposed PILE system effectively could assist English learning in a classroom environment, and enhance the students' learning motivation[3].

Vetter, et al. (2019) finds in the research there are positive evaluations of Wikipedia-based assignments in general, as well as positive evaluations concerning the capacity of Wikipedia-based assignments to teach students critical thinking skills, source evaluation and research, public writing, literature review and synthesis, and peer review [4]. Qfy, et al. (2020) found digital game-based language learning promotes motivation and enabled learners to immerse themselves in learning and

accomplish the tasks more smoothly. On the other hand, the participants who learned with the conventional game-based learning approach had a greater tendency to fail the game repeatedly [5]. Manca (2020) found, whereas highly popular social services like Facebook and Twitter have been thoroughly investigated for their benefits for teaching and learning in higher education, other social media platforms like Instagram, Pinterest, Snapchat and WhatsApp have become an integral component of teaching and learning in higher education, and mostly benefited for second and foreign language learning [6]. Connor, et al., (2019) suggests that the affordances offered by the Word Knowledge e-Book technology, which are unavailable in paper-based books, can support students' development of meta-cognition, including word knowledge calibration, strategy use, and word learning skills[7].

Id, A. et al., (2019) finds that learning in these collaborative virtual environments (CVEs) can be aided by increasing motivation and engagement through the gamification of the educational task; the multi-modal CVE improves student learning performance and aspects of subjective experience when compared to the non-multimodal control. Online learning platforms are integrated systems designed to provide students and teachers with information, tools and resources to facilitate and enhance the delivery and management of learning [8]. Mohamadi (2018) investigated the effect of online summative and formative assessments on EFL junior university students' writing ability and found using engaging technology and techniques along with appropriate assessment strategies is a powerful way of making learning efficient [9]. Robinson, et al. (2019) finds teachers perform a range of teaching tasks with both digital and non-digital tools; and teachers often depend on familiar, commonly available resources to perform teacher and learner actions. The teachers should be offered more targeted trainings for writing and communication teachers about the use of digital resources, and be encouraged to use more deliberately and targetedly digital tools, and systematically collect information about digital resource use in the field [10].

Wang's (2010) results showed that about half groups actively used the work-spaces to share resources, negotiate ideas, and coordinate their collaboration. On the other hand, using the work-spaces helped the teacher to easily track and monitor the collaborative learning process, as the work-spaces documented what group members did and how they gradually completed the assignment [11]. Lee, E., et al. (2016) thinks student-centered learning (SCL) is rooted in constructivist and as well as self-determination theories, and recommends that students: (a) develop ownership over the process and achieve personally meaningful learning goals; (b) learn autonomously through meta-cognitive, procedural, conceptual, and strategic scaffolding; and (c) generate artifacts aimed at authentic audiences beyond the classroom assessment[12].

The above literature review shows that, on the one hand a new learning environment for foreign language learning and teaching has been created with the assistance of multimedia technologies including tools like computers and the Internet, and computer software such as some social services like Facebook and Twitter. On the other hand, based on the constructivist theory, the learner autonomy of the learner is greatly promoted with the help of those multimedia technologies.

In China, in recent years, with the enrollment expansion of colleges and universities, the comprehensive qualities of college students have been declining. The lower qualities of the students come along with the weaker learner autonomy. Hence, how to improve the learner autonomy of the students becomes a tough task for us college English teachers. Actually, with the promulgation of "College English curriculum teaching requirements (Trial)" by the Ministry of education in China in 2004, enhancing students' learner autonomy has become one of the teaching objectives of College English teaching [13]. According to this document, an important sign of the success of teaching mode reform is the formation of students' personalized learning methods and the development of students' learner autonomy (2004). The document also says, the goal of China's English teaching reform is to establish a teaching system which is guided by foreign language teaching theories, integrated into

various teaching modes and means. Therefore, we need to use modern educational technology to reform the traditional teaching mode and enhance students' learner autonomy. Since 2004, a lot of researches on autonomous learning are seen in China. As an English teacher of vocational college, the author attempts to make a tentative study of learner autonomy of the students in vocational college of China, by integrating the theory of constructivism in the daily English teaching assisted with current multimedia technologies.

## 2. A brief review of constructivism

According to the constructivism, represented by J. Piaget, O. Kernberg, R. J. Sternberg, D. Katz and Vogotsky, the meaning of knowledge is constructed by the learners themselves, and the students are the active constructors of knowledge and meaning, rather than the passive recipients of external stimulation and the objects of indoctrination, which determines that the students are the center and subject of teaching activities (Wang, 2018) [14].

Constructivism illustrates the category of learning as follows:

First, learning is the social construction of knowledge. Constructivism holds that learning is not a simple process of taking, putting, storing and proposing textbook knowledge, but a process of learners actively constructing the meaning of knowledge and generating their own experience, explanation and hypothesis. In this process, learners are not remembering others' knowledge, but constructing their own knowledge as an active thinker.

Second, learning is learners' own active construction. Constructivism pays attention to the main role of learners and their subjective initiative. Learners do not passively accept the stimulation of external information, but actively and selectively perceive the information according to their previous cognition, select, and process the information, and construct their own meaning of it. Hence, learning is neither a process in which teachers simply transfer knowledge to students; nor is it a process in which students mechanically copy knowledge, but it is a process in which learners construct knowledge on their own initiative. Therefore, the process of learning is not passive, but active and autonomous.

Third, learning is the growth of experience structure. The acquisition of meaning by learning is based on the learner's original knowledge and experience, recoding new information, new knowledge and so on, and constructing their own understanding. Piaget called this process "assimilation" and "adaptation". That is, when learners' existing cognitive structure can absorb new information and experience, they will construct knowledge in the way of "assimilation"; when learners' original cognitive structure cannot cope with new information and experience, they will construct knowledge in the way of "adaptation". Moreover, assimilation, adaptation and balance are a never-ending and dynamic process.

To summarize, constructivism regards learning is learner's active and autonomous construction of knowledge and experience.

Constructivism teaching view may be concluded as follows:

First, teaching is the cooperative construction between teachers and students. Teaching is to stimulate and challenge their original knowledge and experience, provide students with effective guidance, support and environment, help students grow (construct) new knowledge experience on students' original knowledge experience. The growth of students' experience structure (including knowledge, skills, attitude, etc.) is the purpose of teaching, but this kind of "growth" can only be achieved through students' own construction activities. Teachers should design good activities, resources and environment for the growth of students' psychological structure, but teachers can't replace their

"growth". Therefore, the teaching design should change from "teacher-centered" to "student-centered", from outstanding reception to outstanding exploration and discovery, from focusing on learning results to paying attention to the learning process, from subject knowledge centered learning to problem centered learning, from external management to students' self monitor. That is, to develop students' learner autonomy is one of the essential objectives of teaching.

Second, teachers are loyal supporters, active helpers and guides of students' knowledge construction. Learning is a process of meaning construction, and teaching is not to "pour" knowledge and experience into students' minds from the outside, but to guide students to develop (construct) their own new experience from their old experience. The role of teachers should be changed from the instigator of knowledge to the guide of learning, from the one-way teacher to the collaborator of learning, Teachers should change from the information provider to the 'coach' and the 'learning partner' of students, in other words, teachers themselves should also be learners. Good learning should give learners better opportunities to construct knowledge independently.

Third, teachers should give lectures in dialogue. Since knowledge is actively constructed by individuals, it cannot be directly instilled into learners through the teaching process; students can only actively participate in the whole learning process, through consultation, conversation, and other ways, to construct the meaning of knowledge in the interaction with teachers. Therefore, interactive teaching should be promoted between teachers and students. The classroom interaction may be the interaction between students and teachers, or between students and students. Through the communication and discussion with teachers and students, students can constantly improve the meaning construction of knowledge, and improve their cognitive ability.

Fourth, teachers should create situation for teaching. Since knowledge exists in concrete, situational and perceptible activities, it can only be truly understood through practical application activities. In situational learning, learners should also cooperate and interact with each other in the learning community, and continue to negotiate and communicate. Therefore, social constructivism attaches great importance to the sociality of learning, the existence of knowledge in social context, and the use of learning community in cooperative learning. Learning community includes students, groups, classes, schools, and families. Social constructivism believes that every learner has his own unique knowledge and experience background. Therefore, many discussions and co-operations between teachers and students, between students and students, are very helpful for students to construct knowledge effectively. To create an environment conducive to students' learning, the teacher should provide appropriate encouragement, guidance, and support to actively stimulate students' learning interests, and learning motivation.

In a word, constructivism thinks the teacher should create a cooperative, student-centered teaching situation where students can make dialogues and interact with the teacher and other students.

### **3. Utilization of multimedia technology to optimize college English classroom teaching**

Multimedia technology can be used to optimize college English classroom teaching as follows.

First, multimedia technology can be used to set up situation for students to stimulate learning interest and play the main role in class room teaching. Multimedia courseware enables students to read the teaching content, listen to the sound information related to the lecture, and watch the experimental process. This new form of information has changed the boring and single traditional teaching mode, for the students can understand information more vividly, increase their interest in learning, obtain information actively and timely, and desire to express themselves. By interaction between teachers and students, the students are no longer the passive receivers of classroom teaching. Multimedia technology can provide students with a variety of information, such as sound, light, electricity, etc., and make the classroom teaching colorful, rich and vivid. In such a harmonious teaching situation,

students' interest in learning will be greatly improved. As a result, the comprehensive, practical, interesting classroom teaching can be further strengthened, and students can get twice the result of learning with half the effort.

Second, multimedia technology can be used to control teaching rhythm and improve teaching effect. Teachers can use multimedia to collect and count all students' answers quickly and analyze the teaching effect in time, so as to adjust the rhythm and process of teaching, get feedback in time to regulate the teaching reasonably, further mobilize the students' initiative of learning, and improve the efficiency of classroom teaching.

Third, multimedia technology can be used to create learning atmosphere to effectively stimulate students' desire for knowledge and cultivate students' learner autonomy. Multimedia teaching design can provide text, graphics, audio, animation, video, and even artificial intelligence to create a vivid, interactive and dynamic teaching atmosphere, so as to cultivate students' learner autonomy.

In short, multimedia technology can be used to optimize college English classroom teaching by providing abundant information, creating a vivid, interactive and dynamic teaching atmosphere, and mobilizing the students' initiative of learning.

#### **4. Research on learner autonomy**

The above study shows, constructivism is the theoretical basis of multimedia assisted English teaching. At the same time, constructivism also emphasizes students' learner autonomy development. Students are the main body of teaching, and the process of multimedia assisted teaching is the process of learners' active construction of meaning. Multimedia technology can best embody the student-centered language learning mode and provide a reliable platform for students' autonomous learning. According to Henri Holec, learner autonomy is the ability to take charge of one's own learning (Holec, 1981) [15]. Little defined learner autonomy as essentially a matter of the learner's psychological relation to the process and content of learning (Little, 1991) [16]. And Dickinson defined learner autonomy as a situation in which the learner is totally responsible for all the decisions concerned with his/her learning and the implementation of those decisions' (Dickinson, 1993) [17]. This paper chooses Holec's definition of learner autonomy, for it studied language learning in its holistic view with the cognitive, meta-cognitive, affective and social dimensions. It sees autonomous learning as a double process: learning the foreign language, and learning how to learn. The above theories consider that learner autonomy generally covers the following five items: goal setting, learning techniques selecting, monitoring progress, content and progress setting, and learning evaluation. Therefore, based on these five items, a questionnaire on learner autonomy was made respectively at the beginning and at the end of the first semester among the fresh students in the writer's college.

The main content of the questionnaire is as follows:

First, the item of goal setting contains 5 subitems: establishing long-term learning objectives, establishing short-term learning objectives, making semester plan, making yearly plan, and planning learning time. Second, the item of learning techniques selecting includes 6 subitems: understanding learning strategies, using vocabulary learning strategies, using reading strategies, using listening strategies, using writing strategies, and using communicative strategies. Third, the item of monitoring progress entails 8 subitems: arranging the study according to the plan, checking the completion of the plan, controlling learning time and progress, previewing before class, completing the learning task, cooperative learning, correcting mistakes, and overcoming negative emotional factors. Fourth, the item of content and progress setting includes 5 subitems: choosing extracurricular reading materials, choosing extracurricular listening materials, keeping writing English weekly record, creating opportunities to practice oral English, and participating in activities of interest. Fifth, the item of learning evaluation 5 subitems: evaluating classroom performance, testing unit learning, summarizing

the test results, reflecting on the deficiencies in learning, and reviewing and checking regularly. The analysis of the data from the questionnaires is in the following part of the paper.

## 5. Designing on the cultivation of college students' learner autonomy

After the placement test at the beginning of the first semester in 2019, 160 fresh students were divided into a control group and an experimental group. There 80 students in either group who were the majors of science or of liberal arts. After completing the 14-week classroom teaching, all the 160 students who participated in the study were tested for the English level and the second test scores were compared with the previous test via SPSS software. The levels of the two tests before and after the experiment were roughly equivalent to those of CET-1 and CET-2 (College English Test Band 1 and Band 2 in China).

Table 1: Descriptive Statistics for control group and experimental group in test 1

		Minimum	Maximum	Mean	Std. Deviation
control group	sex	1	2.00	1.41	0.50
	score of test1	39	74.00	54.03	6.03
	goal setting	1	4.80	2.78	0.88
	learning techniques selecting	1	4.33	2.71	0.70
	monitoring progress	1.13	4.13	2.79	0.66
	content and progress setting	1	4.20	2.44	0.73
	learning evaluation	1.2	4.00	2.66	0.64
experimental group	score of test1	39	71.00	53.83	5.58
	goal setting	1	4.80	2.87	0.81
	learning techniques selecting	1	4.50	2.65	0.77
	monitoring progress	1	4.63	2.80	0.68
	content and progress setting	1	4.40	2.44	0.80
	learning evaluation	1	4.00	2.56	0.73
	sex	1	2.00	1.43	0.50

Table 1 shows, the control groups were made up of 33 male and 47 females, while the experimental groups were compose of 34 males and 46 females, indicating that the students in both groups have the similar English proficiency and learner autonomy. Since the mean score of the first test was below the pass mark in either group, and each item of learner autonomy was valued less than 3 (with each value ranging from 1 to 5), it was obvious that the overall English proficiency and learner autonomy of the vocational college students were far from satisfaction.

In addition, as the descriptive statistics on the subitems of the 5 items of learner autonomy displayed, the mean of each of the following subitems is listed among the lowest: keeping writing English weekly record (1.76), using communicative strategies (2.19), creating opportunities to practice oral English (2.31), previewing before class (2.33), testing unit learning (2.35), evaluating classroom performance (2.38), and participating in activities of interest (2.43). This suggests that among the 160 students, most of them are inactive in after-school learning, rather reluctant to cooperate with others in study, and unliable to evaluate their own classroom performances.



Table 2: Paired-samples T-tests for the two groups

		t	Sig.
pair 1	control-test2 – experiment-test2	-22.687	.000
pair 2	control-test1 - control-test2	-38.516	.000
pair3	experimental-test1 –experimental-test2	-57.322	.000

After comparing the two test scores of 160 students (as shown in table 2), it was found that the test scores of the experimental groups were significantly different ( $t=-22.687$ ,  $p=.000<.05$ ) from those of the control groups. In addition, either the two scores of the experimental groups or of the control groups were significantly different from each other, but the difference of those of the experimental ( $t=-57.322$ ,  $p=.000<.05$ ) was far greater than those of the control ones ( $t=-38.516$ ,  $p=.000<.05$ ); that is to say, through one semester’s learning, both groups of the students made some progress in English, yet those of the experimental groups made far greater progress than their control group counterparts.

Table 3: Descriptive Statistics of scores in 2 tests

	Minimum	Maximum	Mean	Std. Deviation
control test1	39	74	54.03	6.03
control test2	44	80	60.53	6.64
experimental test1	39	71	53.83	5.58
experimental test2	47.5	83	66.16	6.42

Table 3 further confirmed the result in table 2, the mean score (66.16) of the experimental groups was much higher than that of the control groups (60.53) for the 2nd test at the end of the experiment.

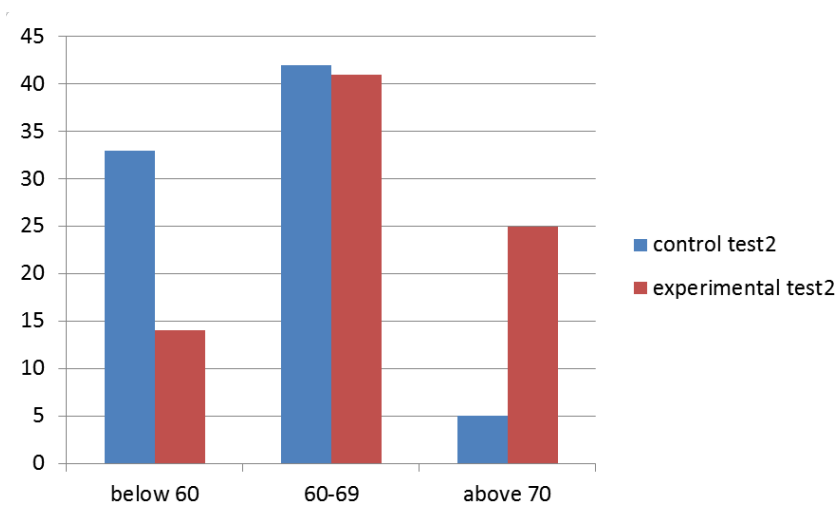


Figure 1: Comparison of the 2nd test for control groups and that for experimental groups

As figure 1 shows in the experimental groups there were far more students with higher scores of above 70 than in the control groups, with the proportion of the number 25 to 5. On the other hand, in the experimental groups there were much fewer students with lower scores of below 60 than in the

control groups, with the proportion of the number 14 to 33, despite the numbers of students with medium scores between 60 and 69 were quite similar in both groups. Here, it was repeatedly demonstrated that in the multimedia assisted teaching environment, the test scores of the experimental groups were significantly different from those of the control groups.

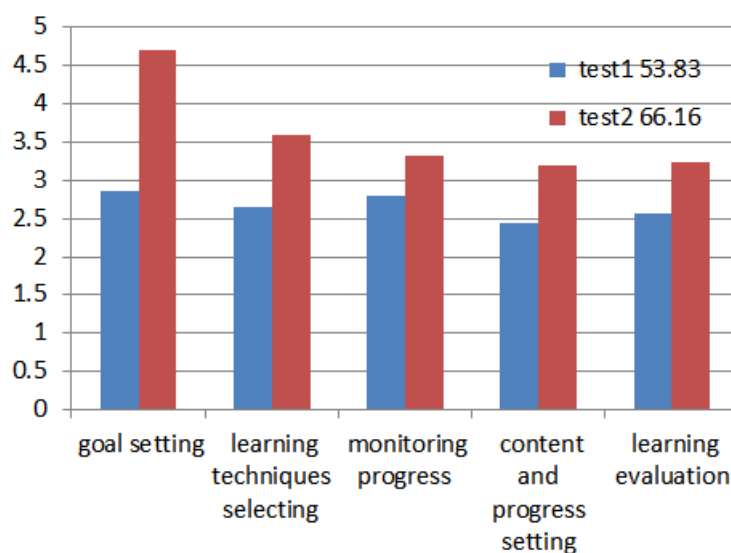


Figure 2: Comparison of two tests for experimental group

Figure 2 displayed, through one semester’s multimedia assisted teaching, the learner autonomy of the experimental groups got enhanced to a considerable degree, especially in goal setting. And the students also did fairly well in other 4 aspects of learner autonomy like learning techniques selecting, monitoring progress, content and progress setting, and learning evaluation. Besides, in the data analysis, there existed strong positive correlations between the score of test two and each of the four aspects of learner autonomy: learning techniques selecting (.383\*\*), monitoring progress (.478\*\*), content and progress setting (.303\*\*), and learning evaluation (.281\*) (\* P < 0.05; \*\* p < 0.01). Hints from figure 2 may be that multimedia assisted teaching can enhance the learner autonomy of the students on one hand, and strengthening the learner autonomy will contribute to the improvement of students’ English proficiency on the other hand.

## 6. Measures for cultivation of college students’ learner autonomy in the multimedia environment

Benson (2001) recommended five types of approaches to foster students’ learner autonomy: first, resource-based approaches emphasized students’ independent interaction with learning materials; second, technology-based approaches focused on learner-technology interaction; third, learner-based approaches are concerned about students’ learning strategy training; fourth, classroom-based approaches emphasized student-teacher relationship in classroom and students’ planning and evaluating of their learning; and fifth, curriculum-based approaches emphasized students’ evaluation of their learning and the whole curriculum [18].

As to how to cultivate college students' learner autonomy in the multimedia environment, the writer assumes that constructivism theory combined with multimedia assisted teaching can enhance the learner autonomy of the students on one hand, and strengthening the learner autonomy will contribute to the improvement of students’ English proficiency on the other hand. Some measures may be taken to meet this objective as follows.

First, teachers should firmly take "students" as the center of teaching and "teachers" as the auxiliary.



The university can advocate to create a student-centered campus culture to develop the students' awareness of learner autonomy. The colorful campus culture provides the students with various favorable conditions to study in. For instance, students can become active in learning English and make good performance by joining various students clubs and societies, like English club, English Corner, English drama society, English reading club, and the like. In addition, abundant Internet resources in campus network provide for the students a sea of learning materials for their self-study after class. They can attend online courses, download and read e-books from the campus digital library, and so forth. The writer has been using the online software, correcting network (named Pigai in Chinese) for many years to help the students write online. Many students get lots of interest in the automated correction of their English compositions online when they finish their writings and get the results automatically in a few seconds. The software can also give them some hints to improve their writings, so that after each repeated correction they get a new higher score of their writing and also new fulfillment from their work.

<input checked="" type="checkbox"/>	NO	Title	Number of students	Time created	Deadline
<input checked="" type="checkbox"/>	1480245	My Role Model	51	2019-11-14	2020-01-04
<input checked="" type="checkbox"/>	1471421	The Most Unforgettable Gift I Have Ever Received	84	2019-11-05	2019-12-26
<input checked="" type="checkbox"/>	1460345	My View on the Role of Technology in Education	12	2019-10-25	2019-11-30
<input checked="" type="checkbox"/>	1438327	My Favorite	113	2019-09-30	2019-12-21
<input checked="" type="checkbox"/>	1429333	On National Day	139	2019-09-19	2019-10-28
<input checked="" type="checkbox"/>	1429329	My Campus Life	148	2019-09-19	2019-10-25
<input checked="" type="checkbox"/>	1420464	My Views on Hong Kong Riots	71	2019-09-02	2019-10-08

Figure 3: Correcting network, an online service system of automatically correcting English compositions (modified from <http://www.pigai.org/index.php?c=teacher&f2=>)

Second, teachers should establish a positive relationship with their students, and change the traditional role of teachers from the authority to the friends of the students. An equal good relationship can not only help students to solve their problems in learning by frequent communication with their teachers, but also eliminate students' excessive dependence on teachers.

Third, teachers create a good environment for students' autonomous learning and promote their cooperative learning. To create a harmonious class learning atmosphere, teachers can give the lecture in the forms of dialogue, group discussion, role play, and so on. Teachers should give full play to each student's strengths, improve their team spirit, so that the students can carry out their cooperative learning and cultivate their learner autonomy simultaneously. For instance, in teaching College English Intensive Reading, Book 1, assisted with the corresponding teaching courseware, the writer often asks the students to make dialogues by role-playing (to see Figure 4). And the students concerned are always well-prepared and excited for their roles in the dialogue or play. They show close team spirit in the acting and the rest of the students are also attentive to watch the play, giving them warm-hearted applauds repeatedly, to result in a heated classroom atmosphere.

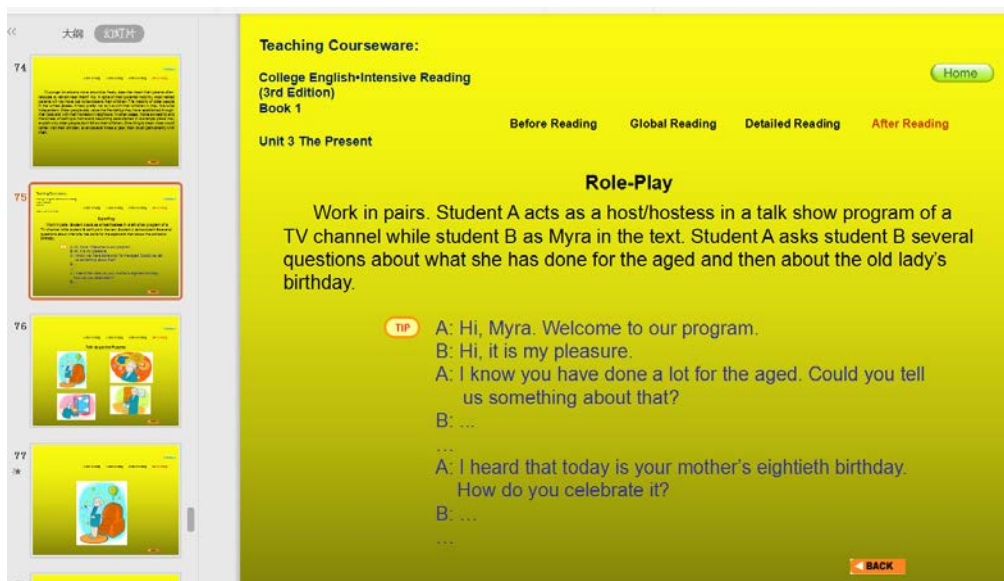


Figure 4 Multimedia teaching courseware constructs a lively classroom atmosphere.

Fourth, teachers should leave the students more free time in class for them to speak English, and evaluate their performance. This is especially important for the vocational college students, as shown from the above survey. Those students are mostly poor at English with uneven levels of proficiencies, and are unliable to evaluate their classroom performances. Teachers should encourage them to speak and do not try to interrupt their speaking no matter how many mistakes they may make. Try to find the students progress no matter how little it may be and praise them for it as much as possible. At the beginning of the first semester, the writer always recommends to the students some methods to practice their English speaking and listening. For example, the write usually encourages the students to always do morning reading of English materials, like classic works by the famous writers as Bacon, Mark Twain, and so forth, or to read their textbooks like College English Intensive Reading. As to the listening practice, the writer will tell the students to start listening to VOA Special English for half an hour or so every day. Anyhow, it is essential to give the students more time and more room to practice their English whether in class or after class.

Finally, teachers should teach students in accordance with their aptitude. In view of the uneven levels of English proficiencies of vocational college students, it is particularly necessary for the teacher to understand the actual situation of the students, help the students to position themselves correctly, and encourage the students to learn to self adjust themselves and self evaluate themselves in study in a proper way.

## 7. Conclusion

By far, the paper has covered the literature review on multimedia assisted teaching, the theory of constructivism, research on learner autonomy, data analysis of the result of the experiments concerned, and measures for cultivation of college students' learner autonomy in the multimedia environment. The following conclusions may be arrived at from the research. First, a new learning environment for foreign language learning and teaching has been created with the assistance of multimedia technologies. Second, combined with those multimedia technologies, the constructivist theory, can greatly promote the students' learner autonomy.

Constructivism thinks the teacher should create a cooperative, student-centered teaching situation where students can make dialogues and interact with the teacher and other students. And utilization

of multimedia technology to optimize college English classroom teaching persists in the following three aspects: providing abundant information, creating a vivid, interactive and dynamic teaching atmosphere, and mobilizing the students' initiative of learning.

An experiment was designed on the cultivation of college students' learner autonomy. The result of the experiment shows that multimedia assisted teaching can enhance the learner autonomy of the students on one hand, and strengthening the learner autonomy will contribute to the improvement of students' English proficiency on the other hand.

As to how to cultivate college students' learner autonomy in the multimedia environment, some measures may be taken as follows.

First, teachers should firmly take "students" as the center of teaching and "teachers" as the auxiliary. Second, teachers should establish a positive relationship with their students, and change the traditional role of teachers from the authority to the friends of the students. Third, teachers create a good environment for students' autonomous learning and promote their cooperative learning. Fourth, teachers should leave the students more free time for them to speak English both in class and after class, and evaluate their performance. Finally, teachers should teach students in accordance with their aptitude. In view of the uneven levels of English proficiencies of vocational college students, this is particularly necessary.

To summarize, it may be a long way to go for teachers to cultivate vocational college students' learner autonomy in the multimedia environment. Teachers should guide the students to establish long-term learning goals and keep lifelong learning. Anyway, in the current multimedia assisted environment, based on the student-centered teaching mode, our goal to cultivate college students' learner autonomy is to enable them to learn well, to learn happily, and to become erudite persons.

## References

- [1] Kang, I. , Choi, J. I. , & Chang, K. . (2007). *Constructivist research in educational technology: a retrospective view and future prospects*. *Asia Pacific Education Review*, 8(3), 397-412.
- [2] Huang, et al. (2010). *Investigating learners' attitudes toward virtual reality learning environments: based on a constructivist approach*. *Computers & Education*, 55(3), 1171-1182.
- [3] Yang, et al. (2010). *Integrating video-capture virtual reality technology into a physically interactive learning environment for English learning*. *Computers & Education*, 55(3), 1346-1356.
- [4] Vetter, M. A, Mcdowell, Z. J., & Stewart, M. (2019). *From opportunities to outcomes: the Wikipedia-based writing assignment*. *Computers and Composition*, 52(JUN.), 53-64.
- [5] Qfy, A. , Gjh, A. , & Di, Z. B. (2020). *Balancing cognitive complexity and gaming level: effects of a cognitive complexity-based competition game on efl students' English vocabulary learning performance, anxiety and behaviors*. *Computers & Education*, 148.
- [6] Manca, S. (2020). *Snapping, pinning, liking or texting: investigating social media in higher education beyond Facebook*. *The internet and higher education*, 44.
- [7] Connor, C., Day, S. L., Zargar, E., Wood, T. S., Taylor, K. S., & Jones, M. R., et al. (2019). *Building word knowledge, learning strategies, and meta-cognition with the word-knowledge e-book*. *Computers & Education*, 128, 284-311.
- [8] Id, A., De, B., Grs, A., & Sp, C. (2019). *The impact of multi-modal collaborative virtual environments on learning: a gamified online debate*. *Computers & Education*, 130, 121-138.
- [9] Mohamadi, Z. (2015). *Comparative effect of online summative and formative assessment on EFL student writing ability*. *Studies in Educational Evaluation*, 8, 59: 29-40.
- [10] Robinson, J., et al. (2019). *State of the Field: Teaching with Digital Tools in the Writing and Communication Classroom*. *Computers and Composition*, 54.
- [11] Wang, Q. *Using online shared work-spaces to support group collaborative learning*. (2010). *Computers & Education*, 55(3): 1270-1276.
- [12] Lee, E., et al. (2016). *A design framework for enhancing engagement in student-centered learning: own it, learn it, and share it*. *Educational Technology Research and Development*, 64(4):707-734.
- [13] Department of Higher Education. (2004). *College English teaching requirement (on Trial)*. Beijing: Higher Education Press.

- [14] Wang, Z. (2018). *Teaching compass: an integrated teaching model based on Constructivism*. Beijing: Chinese Translation Publishing House.
- [15] Holec, H. (1979). *Autonomy and foreign language learning*. Communicative Competence.
- [16] Little, D. (1991). *Learner Autonomy 1: Definitions, Issues and Problems*. Dublin: Authentik.
- [17] Dickinson, L. (1993). *Talking shop: Aspects of autonomous learning*. An interview with Leslie Dickinson. *ELT Journal*, 47(4), 330-336.
- [18] Benson, P. (2001). *Teaching and Researching Autonomy in Language Learning*. Harlow: Longman/Pearson Education.