Exploration and Practice of Autonomous Learning Teaching Mode for Accounting Professional Courses Based on "Rain Classroom"

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Abstract   Autonomous learning ability is the ability of students to learn voluntarily. The book "The Learning Revolution" points out that one of the goals of education in the 21st century is to require students to understand learning strategies and learning methods and to put them into study practice. However, now the situation is that quite a number of our students do not understand how to learn and there are different levels of "study obstacles". They cannot leave their teachers at all. This situation is really worrying. In today's higher vocational education, in addition to teaching students professional knowledge and skills, what should be cultivated is the students' "The ability of Autonomous learning". As the saying goes, "it is better to teach people how to fish than to give them fish directly". Therefore, it has become an important duty of teachers in higher vocational education to explore how to cultivate and improve students' autonomous learning ability in the teaching of professional courses in higher vocational education. Fortunately, I have met "Rain Classroom", and with the help of the "Rain Classroom" online learning tool developed by "Tsinghua University XuetangX", launched in April 2016, we could apply "Rain Classroom" to the teaching of professional courses and explore the teaching mode of professional courses based on "Rain Classroom" in order to better train and cultivate students' autonomous learning ability and improve the effectiveness of course teaching.

Keywords   Autonomous Learning, Rain Classroom, Teaching Model, Exploration, Practice

1. The Introduction

Autonomous learning ability is the ability of students to learn voluntarily. The book "The Learning Revolution" points out that "one of the goals of education in the 21st century is to require students to understand learning strategies and learning methods and to put them into study practice" [1]. However, today's situation is that quite a number of our students do not understand how to learn and there are different levels of "study obstacles". They cannot leave their teachers at all. This situation is really worrying. In today's higher vocational education, apart from teaching students professional knowledge and skills, what should be cultivated is the students' "The ability of Autonomous learning". As the saying goes, "it is better to teach people how to fish than to give them fish directly". In addition, the great educationist of our country, Mr. Tao Xingzhi, had said that 'teaching' is for 'not teaching'. Therefore, it has become an important duty of teachers in higher vocational education to explore how to cultivate and improve students' autonomous learning ability in the teaching of professional courses in higher vocational education. Fortunately, I have met "Rain Classroom", and with the help of the "Rain Classroom" online learning tool developed by "Tsinghua University XuetangX", launched in April 2016, We could apply "Rain Classroom" to the teaching of professional courses and explore the teaching mode of professional courses based on "Rain Classroom" in order to better train and cultivate students' autonomous learning ability and improve the effectiveness of course teaching.

Autonomous study or independent study [2] is also known as self-regulated learning, which refers that the learners have knowledge and skills based on self-knowledge, independence and with the right way to use certain learning methods to access knowledge, to discover, and to solve the problem. Generally, independent study includes self-monitoring, self-directed and self-reinforcing.

"Rain Classroom" [3] (http://rain.xuetangx.com/) is an online learning tool developed by "Tsinghua University XuetangX", launched in April 2016. Through micro-credit

services, it provides services for pushing before class, real-time answers, multi-screen interactive, answering question barrage and analysis of student data. On the student side, "Rain Classroom" provides in-class timed exercises, "do not understand" buttons, barrage, preparation before class, PPT data, and other functions, which helps students to preview, consolidate the knowledge and feedback learning information; On the teacher side, all the students learning behavior data can be automatic completely collected, which helps teachers to quantitatively understand students' learning effects and grasp the trajectory of students' learning.

In fact, we all know that, in terms of education at present, vigorously practice exploration outreach activities of the teaching model of such as "Mu MOOCs" and "flip the classroom" are developing in the foundation education of primary and secondary schools [4]. But it needs to be pointed out that "Mu class MOOCs" and "flip the classroom teaching model" give us a good education concept and education thought, also let us see the prospect and dawn of the traditional education pattern reform. However, we have to realize that the reform of our traditional teaching model exists great resistance [5], particularly, backward concept and the ability of educators, the lack of study desire of students, weak motivation, and students still do not have autonomous learning ability required by the foregoing new teaching model., These are the huge barriers for new MOOCs and flip classroom. Hence, in addition to exploring course teaching mode, it is also urgent to figure out how to use "Rain Class" to cultivate and improve students' autonomous learning ability and to effectively teach students professional knowledge and skills.

2. Teaching Model of Autonomous Learning Course Based on "Rain Classroom"

As an accounting teacher in a higher vocational college, I mainly engaged in basic accounting, auditing, tax law and other professional courses teaching. I have been working on the reform of classroom teaching. In recent years, my group and I have tried to make a comprehensive and thorough class teaching reform with the help of "Rain Classroom" teaching tools. We always believe that the teaching process of accounting major should also be a process of cultivating and evaluating students' independent learning ability. So we use the theory of constructivism and theory of learning Pyramid [6] and combine the actual conditions of higher vocational students and the characteristics of accounting professional course to construct teaching model of autonomous learning. Our teaching model of autonomous learning is mainly composed of four parts: course design, course preparation, classroom teaching, and summarizing the reflection. The

teaching pattern of autonomous learning based on the "Rain Classroom" for higher vocational students' professional course we built is named "BPR + 142 curriculum model".

Here the new classroom teaching process design asks for the teacher to be able to grasp the macro accounting professional talent training scheme, course standard and the requirement of teaching material, and to be able to accurately treat each class micro Process design knowledge and skills through good class - "teaching Process Reengineering", namely "course BPR" (Business Process Reengineering), which stimulates the enthusiasm of students to participate in the study and leads the students to participate in, and then to achieve learning goals.

The "Business Process Reengineering (restructuring)" (Business Process Reengineering, BPR) [7] first raised by America's Michael Hammer and James Champy, reached the prime of a kind of management thought in the 1990. With the emphasis on considering the business process as the object and center, and the cares on customer needs and satisfaction as the goal, it aims to fundamentally rethink and radically redesign the existing business process. It uses advanced manufacturing technology, information technology and modern management means to maximum realize the functional integration in technology and administration. It tends to break the traditional functional organization structure and establish a new type of the process of organization structure, so as to realize the dramatic improvement of enterprise management in terms of cost, quality, service and speed etc.

Here we proposed course BPR (Business Process Reengineering), which also treats the teaching process as the object and center, and the cares on students' needs and learning satisfaction as the goal to " fundamentally rethink" and "radically redesign" the existing traditional "teaching Process". We aim to use the advanced network technology, information technology, mobile Internet, and big data background to realize our great improvement on the teaching of efficiency, effectiveness, quality, service and so on.

Under our "course BPR" model, teachers should not only guide students to learn knowledge or improve skills, but also to observe and record for the participation of students' classroom learning attitude, participation, participation effect. It can be considered as the direct basis for student learning, evaluation of autonomous learning ability.

We take experiment in the course teaching according to our new class design, pay attention to the students' responses in the classroom, and often periodically collect students' feedback, adjust and optimize "BPR course", to gradually form a sustainable teaching model.

Our research mainly includes the cultivation of students' autonomous learning ability and evaluation, and the emphasis fully depends on the current mature network environment. Especially, we used "Rain Classroom" of the

latest optimal platform at present, and with the expansion of space and time, to radically redesign our class teaching process. In the course teaching of auditing practice, we adapted the "142" teaching model: "1" stands for "self-preparation for 10 minutes before class", "4" means "autonomous learning for 40 minutes on the class", and "2" refers to "independent review for 20 minutes after class".

By this way, with the help of the resources before preparation and information push function for review materials after class by the "Rain Classroom", as well as the comprehensive ability of automatically information acquisition of students, the preview, review, and class performance are known by teacher, which facilitates teachers to adjust teaching rhythm, teaching content, teaching means, and teaching methods etc., and promotes the effectiveness of the course teaching, improves the teaching quality of teaching, and also greatly promotes the improvement of students' autonomous learning ability.

3. Practice Research on Teaching Model of Autonomous Learning Course Based on "Rain Classroom"

a. Practice Research [8] Process of "Rain Classroom" Teaching Model

Project team performed an experimental research of reformation on teaching model of autonomous learning course based on the "Rain Classroom" for the major of accounting classes on grade 2015. At the beginning of the experiment, we investigated the data from our three parallel classes including accounting class 1501 (Hereinafter referred to as KJ 1501), 1502 (Hereinafter referred to as KJ 1502) and 1503 (Hereinafter referred to as KJ 1503). According to our investigation and the outcomes of previous semester exam in the course of the tax law, we have chosen accounting class 1501 and accounting class 1502 according to the similar level of learning attitude, learning ability and learning efficiency. Accounting class 1501 (53) is identified as comparative classes which is adopt by the traditional teaching model; And accounting class 1502 (52) is identified as the experimental class to reform and experiment the teaching model by the aid of "Rain Classroom" teaching platform. At the end of the experiment, by carrying on the questionnaire survey to the student about "Rain Classroom" teaching model, we organized comparative class and experimental class to participate in the final exam with same paper. In the teaching experiments, autonomous learning evaluation system, developed by the project team, is also introduced to make process evaluation.

b. Teaching Model of "Rain Classroom" Practice Data Analysis and Conclusion

To understand the effect of teaching mode of

autonomous learning course based on the "Rain Classroom", the team used the software SPSS which used for data processing to have independent samples T-test, paired sample T-test statistics, etc. on experimental class and that in comparative class at the beginning of academic level and final exam scores of experimental class, etc.

First, the academic level of the experimental class compared with control class at the beginning of the term (before)

A comparison of the two classes on the final exam results on course of tax law taught by the same teacher before the experiment. It can be seen from the table 1 that significant probability is Sig. (2 - tailed) = 0.344, which is greater than the significance level of 0.05. It shows that the academic level of comparative classes and experimental classes at the beginning of the experiment is basic similar, no obvious difference.

Table 1.   Independent sample T-test results

	type	N	Mean	Std. Deviation	Sig. (2-tailed)
grade	KJ1501	53	70.30	8.89	0.344
	KJ1502	52	66.43	9.63	

Second, discipline result comparison of the experimental class accounting class 1502 when before and after the experiment (Before and after the test)

We are going to compare the two courses with teaching model of autonomous learning course before and after the experiment by the same class accounting class 1502 based on "Rain Classroom". The two courses opened before and after the two semesters, student age was little difference, the same teacher to teach, as core curriculum required by accounting major, also compared from the difficulty of the course itself. On the later semester, course of auditing practice with experimental model was harder than the course of "tax law" which with traditional teaching model before the experiment. From table 2, the Sig. (2 - tailed) = 0.001 < 0.05 significance level, shows that the academic performance of experimental classes and contrast classes made evident improvement in the final exam.

Table 2.   Paired sample T- test results

	course	N	Mean	Std. Deviation	Sig. (2-tailed)
Pair 1	Tax law	52	66.43	6.63	0.001
	Auditing practices	52	73.32	6.07	

Third, the final exam results of the experimental classes accounting class 1502 compared with class accounting class 1501 on course of audit practice (after).

On the second semester in 2016-2017 school year, I taught the courses of auditing practice for the class 1501 and 1502. From table 3, the significant probability is 0.012, which is less than the significance level 0.05, sample overall mean with significant differences. It shows that the academic performance level on the course of auditing

practice is obviously improved for experimental group and control group.

Table 3. Independent sample T-test results

	class	N	Mean	Std. Deviation	Sig.（2-tailed）
grade	KJ1501	53	65.53	7.91	0.0012
	KJ1502	52	74.52	7.12	

From the data analysis results, the teaching model of autonomous learning course based on the "Rain Classroom" can significantly improve the students' academic performance.

c. Learning Evaluation System and Use on the Teaching Pattern of Autonomous Learning Course Based on the "Rain Classroom"

Evaluation of online autonomous learning ability [9] is the important guarantee of the process of learning under the network environment. Building a scientific evaluation system can help students to improve the ability of autonomous learning and improve the effect of autonomous learning through the lack of autonomous learning and feedback adjustment, which is the value of the independent learning ability evaluation system.

According to the research framework of autonomous learning, the project team designed the evaluation index system of the ability of autonomic learning under the "Rain Classroom" based on six dimensions, including the consciousness of independent learning, learning attitude, time management, efficiency, cooperation ability and innovation.

The teaching model practice based on "Rain Classroom" is accordance with the curriculum of auditing. We organized the students' autonomous learning under the network environment, collected data through the "Rain Classroom" platform, and provided the ability of autonomic learning evaluation report.

4. Practice of Enlightenment on the Teaching Pattern of Autonomous Learning Based on the "Rain Classroom"

Practice shows that if the reform and practice of teaching model of autonomous learning professional course based on the "Rain Classroom" wants to truly achieve the goal of teaching reform, improve teaching efficiency and effect, improve the students' comprehensive quality including the independent learning ability, there are still several key problems need to be solved. [10]

a. Depending on High-quality Curriculum Teaching Resources

Using teaching model based on the "Rain Classroom", the teacher must develop their own abundant high quality teaching resources, including pictures and PPT, micro video, exercise library, case library, etc. and these resources must be carefully selected and carefully designed. It must be high quality teaching resources which is suitable for students to use online platforms such as rain classes for fragmented learning.

b. Depending on Excellent Network Teaching Platform

The teaching model of autonomous learning course based on the "Rain Classroom" imparts knowledge and can be done by the students through independent study before class, which requires the support of computer hardware, software, and the network teaching platform such as "Rain Classroom" teaching platform. Therefore, selecting and applying a perfect education informatization network environment is the foundation of implementing teaching model of independent learning based on the "Rain Classroom". But from the situation, although we have tried out the "Rain Classroom" platform, there still exists some problems. The stability of the "Rain Classroom" platform is not very satisfactory, because this kind of teaching model depends heavily on network teaching software and network teaching platform. Students can't open the page or cannot submit exercises answers, which seriously affects the teaching efficiency and effect, in a certain extent, it affects students' learning enthusiasm and initiative, and it is also unfavorable for the evaluation of students' learning and the collection of examination data.

c. Depending on the Optimization of the Teaching Design and Strategy

The teaching model of autonomous learning course based on the "Rain Classroom" is a kind of brand-new teaching model, which needs continuous exploration and practice to improve and perfect the teaching design and teaching strategies of the teaching link and process, to really improve the teaching efficiency and teaching quality of teaching model of autonomous learning course based on the "Rain Classroom" and improve the students' ability of autonomous learning and the ability of comprehensive development.

d. Depending on a New Curriculum Evaluation System

In order to adapt to the reform and practice of new teaching model, we must thoroughly reform the traditional curriculum evaluation mechanism, combine qualitative evaluation and quantitative evaluation, and summative evaluation and formative assessment. By reducing the proportion of final question paper examination results in overall grade, and accordingly improving the proportion of self-preparation before class and class autonomous learning activities involved in performance and

independent review after class, it aims to consolidate the whole progress and to build the corresponding evaluation index system and evaluation standard.

e. Depending on the Teachers' Professional Competence

The teaching model of Autonomous learning course based on the "Rain Classroom" makes students really become the subject of learning and make teachers become the organizer and director of the learning activities. This teaching model requires teachers to change the education ideas, master new teaching skills, and constantly update their education and teaching knowledge, constantly improve the ability of using new teaching strategy and improve information technology, and to improve their professional competence as teachers.

f. Relying on Rigorous Teaching Organization and Management

Self-preparation before class based on the "Rain Classroom", is the basis of the teaching model of autonomous learning course, which determines the efficiency of knowledge. Monitoring and management of self-preparation before class directly determine the success of the teaching model of independent learning course based on the "Rain Classroom". Class autonomous learning activity based on the "Rain Classroom" is the key of autonomous learning teaching pattern, which determines the degree of knowledge internalization, besides, organization and management of class autonomous learning activities directly affect the quality of the teaching model of independent learning based on the "Rain Classroom".

5. Conclusions

In summary, our exploration and practice show that it is very popular for higher vocational colleges to carry out such teaching model of autonomous learning course based on the "Rain Classroom", and it greatly promotes students' learning enthusiasm and initiative. We follow the rules of general education teaching, pay attention to individual differences of students, fully respect the principal position of students' learning, teach students in accordance of their aptitude, and use highly developed network environment and the mobile Internet, through reform of traditional teaching model, to achieve the cultivation of students' autonomous learning ability and training, and implement evaluation and testing of students' autonomous learning ability in the teaching process, which improves the teaching quality of specialized course education and

improves higher vocational students' comprehensive quality and the individual survival and development ability, promotes students' individual development and social progress as well.

Author's Brief Introduction

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REFERENCES

[1] Jeannette Vos & Gordon Dryden. The learning revolution [M]. Shanghai Sanlian Publishing House, Shanghai. 1998.12.01.

[2] Cao Shenghua. Autonomous learning theory and the cultivation of students' autonomous learning ability [J]. Zhengzhou: Journal of North China Institute of Water Conservancy and Hydropower, 2011.10.

[3] http://ykt.io/

[4] Chen Yukun, & Tian Aili. Introduction to MOOCs and flipped classroom [M]. East China Normal University Press. Shanghai. 2014.07.01.

[5] Guo Yulian. Discussion on the reform of classroom teaching model [J]. Education Theory and Practice, 2012.

[6] Li Fang. Education knowledge and ability. Beijing: higher education press, 2011.11. Minto. B. practical training manual on pyramid principles [M]. South China Sea Publishing Company. April 1, 2011.

[7] Ding Jiayun, & Tan Yanhua. Management theory, method and practice [M] Hefei: China University of Science and Technology Press, 2010:52.

[8] Tao Lang Ping, & Liang Xiaohua. Higher vocational college students' autonomous learning ability training study [J]. Changsha: Changsha Civil Administration Occupation Academy Journal, 2011.12.

[9] Chunghwa Lee. College students' network autonomous learning research review [J]. Journal of Suining: Journal of Sichuan Vocational and Technical College, 2012.02.

[10] Gu Shimin. The comprehensive application of independent learning model and classroom teaching model in the computer network environment [J]. Foreign Language Teaching. 2007.06.