Reforming the Teaching and Examination Methods for Erya Online Courses at Tiangong University

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Abstract: *This paper analyzes student learning in the age of the Internet. We specifically evaluate Tiangong University's seven-year teaching and examination reform process, which was introduced with the Erya general education course in 2011. The effect of the reform is evaluated through data analysis and the arguments are brought forward. The first reform of the Erya online general course is an autonomous study mode in the second semester of 2013-2014. The average passing rate is a little higher than for courses that adopted the traditional classroom mode. The second reform of the teaching and examination method is the autonomous learning model and the computer-room examination model in the first semester of 2016-2017. The average passing rate has decreased by 6% compared to the previous semester. However, it is worth noting that the average passing rate in the next semester reached 79.7%, which is 16.6% higher than in the first semester of 2016-2017, and nearly 10% higher than in the second semester of 2013-2014. The effect of the reform is significant, which results in a teaching and examination model that integrates the needs of the university, the teachers, and the students.*

Keywords: Online general course; Autonomous study; Computer-room examination; Online education.

1. Introduction

Rapid technological development has led to global informatization, which has produced a significant change in the learning environment and relevant skills. In China and abroad, information-based network teaching has become an important trend that was brought about by the teaching reform. Students in the 21st century were born in the computer age and were brought up in the era of network information technology. These students prefer learning through "gamification" rather than through the methods and content taught by their parents and teachers. Technological changes, along with the changes in study subjects, have placed new demands and challenges for traditional teaching methods. It is necessary to alter teaching and assessment methods to better meet the needs of students who learn better through the use of technology [1].

Universities offer general courses to students with different professional backgrounds. These courses focus on improving the quality of student learning by optimizing knowledge structures, enhancing life skills, and building their character. The goal is to 21st century students become complete persons with life goals, open and accommodating manners, liberal spirit and emotional expression. This approach is called "whole person" education [2]. These general education courses, however, are often not valued by teachers and students in universities. At Tiangong University, the general education program has encountered some problems. These include an insufficient number of general education courses and the difficulties for students' in selecting these courses. Specifically, teachers are not willing to open general courses to all students, and the level of teaching is not very high. Moreover, students have a negative learning attitude. Considering all the aforementioned problems, we have carried out multi-faceted reform studies and think about how to improve students' autonomous learning ability and improve the passing rate of courses.

2. The Introduction of the Erya Online General Course

In 2011, Tiangong University introduced an online course called Erya online general education. By offering this course online, instructors aimed to solve the problems mentioned in the previous section by using the information network as a teaching mode. This course aimed to meet the needs of students and encourage their independent decision-making and learning, which would lay the foundation for "lifelong learning". The Erya online general course benefitted from a solid online education technology platform and from a large amount of teaching resources. This course represents a new way of teaching, which is taught by famous experts and teachers in various disciplines within China and abroad. It provides students with comprehensive learning resources, which allows them to obtain credits through network learning. In the first semester of 2011-2012, Tiangong University introduced three Erya online general courses, entitled: "Brief History of Science and Technology", "Ten Lectures on Ming History", and "Pursuit of Happiness: A Perspective of Western Ethical History". Each course had a teaching assistant present during class. The teaching assistants led the course by playing the video-recorded lectures given by the famous teachers through Erya's online platform. They also guided students in both online and offline learning. To assess performance, students were required to take an exam. In the first semester of 2011-2012, there were 561 students taking the Erya online general course. The average passing rate of the course was 71.5%, and the satisfaction rate was 95%. This tells us the course was successful. As a result, the university has increased the number of general courses offered in the following semesters. This specific course data is shown in Table 1.

Table 1: Erya online general education courses for each term

Semester	Number of Courses opened	Number of students attending class	Average number of courses
2011-2012-2	32	3512	109
2012-2013-1	28	3566	127
2012-2013-2	25	3080	123
2013-2014-1	28	3979	142
2013-2014-2	32	4488	140
2014-2015-1	28	3946	141
2014-2015-2	28	3619	130
2015-2016-1	27	3557	132
2015-2016-2	30	4596	153
2016-2017-1	38	4132	109
2016-2017-2	42	4251	101
2017-2018-1	59	5116	87
2017-2018-2	57	5288	93

$$\text{Average number of courses} = \frac{\text{Number of students attending class}}{\text{Number of Courses opened}} \tag{1}$$

In Table 1, we can see that there were about 30 open courses in each semester. It is worth noting that the number of courses has doubled to about 60 in the first semester of 2017-2018. In terms of enrollment, the total number of electives was about 4000 from the second semester of 2011-2012 to the second semester of 2016-2017. After the introduction of online teaching resources, the number of electives in the first semester of 2017-2018 and the second semester of 2017-2018 remained around 5000, which shows that students are generally prone to taking online courses. The average number of courses in each semester has gradually increased, peaking at 153 students per subject in the second semester of 2015-2016. After the increase in the number of courses, the average number of courses has dropped significantly. The introduction of the Erya online general education online course solves the problem of students' difficulty in choosing courses. The rich curriculum resources meet students' need to choose high-quality courses, which broadens their horizons, and is conducive to the goal of general education.

3. Investigations about the Teaching and Examination Modes of the Erya Online General Course

The introduction of the general network course has effectively solved the problems of insufficient elective courses, insufficient course content, and low quality of teaching. Instead, the reform has contributed to higher-quality teaching and resources for students. However, our further investigations indicate that the online teaching and examination have also created some problems as follows:

3.1 Investigations on the Teaching Mode

In the age of the Internet, online courses present brand-new teaching and assessment modes. The internet is the medium through which the teaching assistant broadcasts a famous teacher's course in the tradition classroom. The students passively absorb the information given to them without exercising independent learning. It is not uncommon for students to be inattentive in class, to complete assignments for other classes, and to be on their

mobile phone. The final exam for the online general course adopts the tradition examination format, which does not stimulate students' enthusiasm for learning. Moreover, the concept of "mixed credits" is gradually emerging. The online course does not play much of a role in guiding students' autonomous learning.

The lack of interaction between the famous teachers giving the online courses and the students in the classroom affects the two-way communication of knowledge. While the class material is being taught by the teacher, the teaching assistant is responsible for supervising and assisting students as they are learning. However, some teaching assistants believe that their only role in the online course is to play the video with the famous teacher's lecture in the classroom. This is not conducive to the management of students' learning process or to the establishment of a good learning atmosphere.

3.2 Investigations on the Examination Mode

The curriculum's examination methods are too flexible, and the assessment methods are not an adequate reflection of the real level of students' learning. Students are able to get a passing grade and obtain their course credits by intensively studying the course material in a cram-session before the exam. This is not conducive to the cultivation of effective learning abilities among students. Due to these flaws, a reform was necessary to improve the teaching and examination quality of the Erya online course.

4. The First Reform of the Teaching and Examination Mode of the Erya Online General Course: An Autonomous Study Mode

To reform the Erya online general education course, the university started to adopt two teaching and examination modes for one course in the second semester of 2013-2014. These two new modes were the traditional classroom examination mode and the fully autonomous study mode. The traditional classroom examination mode is consistent with what is described in the article. The teaching assistants help students learn on their own in an offline classroom setting, and they give exams based on the offline examination mode. Self-study mode refers to online independent learning and online self-examination. Students can study independently online on Erya course platform. They can learn anytime, anywhere, and at their own pace, without going to the classroom. As long as students finish watching the teachers' video, discussion, homework, and online examination within the prescribed time, they receive credits for the course. The teacher assistant sets up and manages the course, answers questions online, make course announcements, manages the question bank, reviews assignments, and determines the assignment ratio, among other tasks on the Erya general education course platform. This kind of learning and examination mode is different from the traditional classroom teaching and examination mode, as it fully embodies, "student's learning" as its key principle. The course enhances students' independent learning and self-management abilities. The teaching assistant "came out" of the traditional classroom, and established the teaching evaluation system online. This teaching mode represents integrated network teaching. To evaluate the effects of the reform on the teaching and examination modes, the data is analyzed based on the passing rates of students in each course. Table II lists the passing rates in the five courses before and after the second semester of 2013-2014.

Table 2: Course passing rate before and after the reform

No.	Course Name	Course passing rate/%	
		Traditional Mode	*Self-study Mode*
1	Ancient Chinese history	73.5	76.8
2	Ten lectures on Ming history	70.9	72.6
3	Modern physical geography	66.9	73.8
4	The beauty of Chinese poetry	66.6	72.4
5	Pursuit of happiness: From the perspective of Western Ethical history	72.2	71.9

As we can see in Table 2, the passing rates for four of the five courses adopting the fully independent study style is higher than for courses that adopted the traditional classroom mode. The two independent-style courses with the highest passing rates were "Modern Natural Geography" and "the Beauty of Chinese Poetry", which were about 6% higher. Only the passing rates for the courses "In the Pursuit of Happiness: A Perspective of Western Ethical History" remained similar before and after the reform. This shows that the new independent learning mode has been recognized by teachers and students, and the reform that implemented independent online learning has been successful. Therefore, starting in the second semester of 2013-2014, the Erya general education course adopted two integrated teaching and examination modes: traditional classroom and fully autonomous study. Students were free to choose between the traditional course mode and autonomous mode for their general courses. When looking

at students' course selection over five semesters, the courses following the fully independent study model of general education in each semester was almost full in the pre-selection stage.

5. The Second Reform of the Teaching and Examination Method in the Erya Online General Course

Two years after the implementation of the teaching and examination modes that integrated the traditional classroom teaching and autonomous study, the following problems arouse. First, students in autonomous study courses were not given sufficient guidance. The online platform gave students too much freedom and flexibility, which was coupled with weak class management by some teaching assistants, who had a laissez-faire attitude toward students. Also online courses enabled some cheating such as making copies of the video-lectures asking other students to complete the evaluations on their behalf. The most serious offence is fraud during online examination. High-quality curriculum resources cannot be used effectively in an online format. Moreover, the concept of "mixed credit" in general courses is becoming popular among students, which is not conducive to a good study style and high-quality general education. Second, with the traditional teaching and examination mode, students can obtain credits if they come to the classroom to name and finish the homework. The teaching style and classroom management is too loose. For example, most of the teaching assistants play videogames in the classroom instead of explaining concepts for student, and their role in the corner of the classroom is often questioned. For this reason, the university has decided to reform the Erya online teaching and examination style in the first semester of 2016-2017. The specific components of the reform are as follows:

5.1 Reforming the Teaching Method

The teaching methods were reformed by abolishing the traditional classroom teaching mode and adopting the online independent learning mode. Students can study at any time and in any place. They can study in blocks or in fragmented and repeated intervals, which increases their enthusiasm for independent learning. To increase the interaction between the teaching assistants and the students, the university organized two opportunities for the teaching assistants to meet with the students, during the first and the last class, respectively. Teaching assistants met with the students on the first class to introduce the learning objectives, learning methods, and assessment methods of the course, and to establish exchange platforms such as QQ groups and Wechat groups for communication. These communication groups are not only real-time, fast communication channels between teachers and students, but also connect students to each other. Thus, students with similar interest can discuss problems with members of their group, and study together in groups. To a certain extent, group studying can help students that have a lack of self-control. Students understand the examination method, which is explained to them during the first class meeting. This is conducive to better self-study, allowing students to schedule their learning sessions to prepare for the examination, which improved their passing rates for the assessments. At the same time, the teaching assistant can use modern technology to prevent students from copying and sharing the video courses in order to avoid dishonesty in the learning process.

The reform strengthened the training received by teaching assistants. Effective online teaching required teaching assistants to actively participate in providing guidance for the online courses, responding to student inquires in a timely manner, and using Erya background data to comprehensively analyze learning behavior. At the same time, the university regularly provides training for online teachers, to clarify teachers' responsibilities in auxiliary teaching, and improve their familiarity with technology. The aim is to enable teachers to follow the rules of online teaching.

5.2 Reforming the Examination Method

The assessment methods were also reformed. Examinations for online courses were uniformly given in a computer room at a fixed time and place. Teachers also clearly communicated that 30% of the final grade is obtained by watching video at ordinary times, and 70% of the grade comes from the computer examination. Students can study independently on the online platform. After the learning task is completed, they can contact the teaching assistant for the offline examination in the computer room. This examination method, along with the self-study teaching method, not only stimulates the students' enthusiasm for self-study, but also prevents them from cheating and finding a substitute during the examination. This maintains the legitimacy and fairness of the exam process.

The first semester of 2016-2017 and the second semester of 2016-2017 were when the reform of the teaching and examination models took place. We evaluated the overall effect of the reform by comparing the passing rates of

online courses before and after this reform. The specific results are shown in Figure1.

The Average Passing Rate of Online Courses
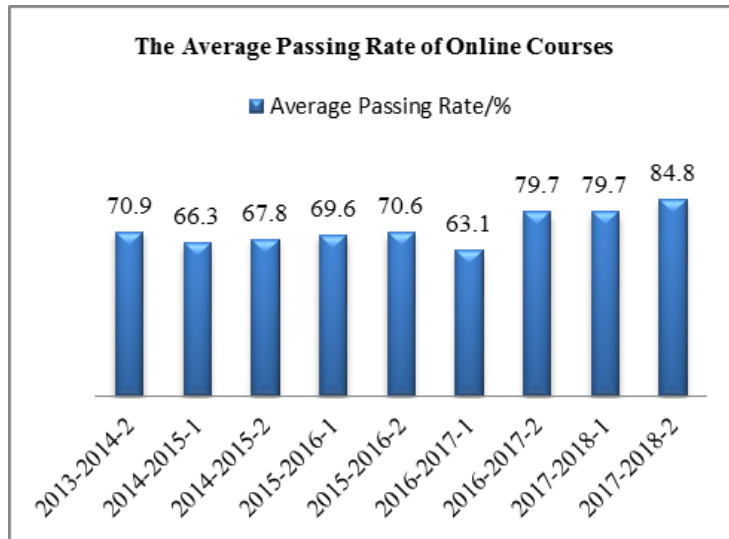
Figure 1: The average passing rate of online courses

As we can see in Figure 1, the average passing rate of online courses is around 70% from the second semester of 2013-2014 to the second semester of 2015-2016. In the first semester of 2016-2017, the average passing rate for the online curses has decreased by 6% compared to the previous semester, resulting in a passing rate of 63.1%. This represents the adaptation period for students and teachers under the new teaching and examination methods resulting from the reform. The decrease in the passing rate can be explained by students' participation in the computer room. The unified test effectively maintained fairness by preventing cheating. In general, teachers and students recognized that the reform resulted in improved teaching and examination methods. Therefore, in the second semester of 2016-2017, the autonomous learning model and the computer-room examination model continued to be implemented. As can be seen in Figure 1, the average passing rate of the course reached 79.7%, which is 16.6% higher than in the first semester of 2016-2017, and nearly 10% higher than in the second semester of 2013-2014. The average passing rate in the next two semesters are 79.9% and 84.8%, respectively. Therefore, the effect of the reform is significant. This demonstrates that the independent study method under the supervision of teaching assistants can enhance students' autonomous learning ability. Students can study anytime and anywhere, which eliminates the traditional passive learning approach. The teaching assistants also played an active role in monitoring and teaching. Thus, the reform resulted in a teaching and examination model that integrates the needs of the university, the teachers, and the students.

6. Conclusion

In line with the online education trend of educational that started in 2011, Tiangong University has introduced the internet-based Erya online general education course, which has lasted for six years. This suited the learning needs of students in the Internet era. After two reforms in teaching and examination modes that were based on the principle of "active adaptation and gradual progress", the online general course has been integrated smoothly with the teaching resources of the university. It formed a network of general education within Tiangong Univeristy, which is "students' autonomous learning, teaching assistants guidance and computer-room examination". The reform of the curriculum did not stop, however, and will continue to improve. The outlook for the course is as follows:

(1) The course assessment methods can be further improved. For example, we can increase the number of questions and answers as well as the group discussions and collaboration among students when completing homework assignments, and incorporate them as part of performance assessments.

(2) Regarding the curriculum teaching mode, it is recommended to increase the number of classroom meetings between teachers and students. For example, the teaching assistants can increase the number of meeting throughout the course, which helps the teacher oversee students' learning process and learning status, and reminds students who are underperforming in their self-study to complete their learning tasks as soon as possible.

(3) Administrators should actively develop the university's online general education courses. The high-quality courses taught by famous teachers on the online platform have broadened the learning channels for students and alleviated some of the difficulties with course selection. However, online courses can be integrated into self-created general courses to form a course system group that fits students' own characteristics. For example, self-created courses can inspire students' thinking and learning from a professional perspective in combination with the 2019-nCoV pneumonia situation.

Acknowledgments

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