

Thinking and Practice on the Construction of Innovative Practice Course

Li Zhang*, Qing Zhu, Hongli Chen

Faculty of Information Technology, Beijing University of Technology, Beijing 100124, China

Abstract: Innovative practice courses are the basis for the implementation of innovation credit and play an important role in cultivating college students' innovative ability. Innovative practice courses should be based on guiding innovation. The construction of courses needs to be carried out comprehensively in the aspects of course content, class organization, and course evaluation methods. Based on the construction of innovative practice courses "Mobile Development Technology Practice", the attempt in the construction of innovative practice courses is introduced. There are still some problems in the development of innovative practice courses in the course selection, evaluation, time setting, and the improvement of innovation, which is needed to be resolved in many ways. In response to the problems, some thoughts and suggestions is given in the paper.

Keywords: Innovation credit; Innovative practice course; Class organization; Course evaluation

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***Corresponding author:** Li Zhang, zl_hlj@126.com

Under the background of promoting national innovation ability, the cultivation of College Students' innovation ability has become an important part. Therefore, universities have strengthened the cultivation of innovation ability in many aspects. Innovation credit has become an important means. Innovative practice courses are basic support for innovation credit. Innovative practice courses aim to explore students' innovative ability, training students' practical ability as a carrier, and embody innovation as the core. Therefore, the content organization and teaching methods of innovative practice courses are

different from traditional courses. In the process of undertaking the teaching task of the innovative practice course of "Mobile Development Technology Practice", some useful explorations are carried out and some problems also be discovered. Our thoughts on the construction of innovative practice courses and discussion on the problems encountered in the course construction is given in the paper.

1 Construction of innovative practice courses

1.1 Innovative guidance should be found in all periods of the course

Innovation is the key of the innovative practice courses. Therefore, the course should focus on guiding and stimulating innovation. Innovative guidance should be found in all periods of the course.

First of all, in the organization of course content, it should be different from other traditional courses. Guiding innovation and students' practice should be the main parts of the course, while introduce to the knowledge is not. So, in the class of "Mobile Development Technology Practice", a few units for introducing knowledge are arranged to relevant knowledge for students. The content mainly focuses on overviews and comprehensive analysis. The rest of the time is given to students, mainly for student activities. Focusing on innovation and practice, students' work is divided into ideas collision, ideas realization, ideas display, and technical exchanges. After the course defense, introduction related to the application for patents and copyrights is added.

Due to the particularity of the content organization, the teaching methods and class organization of innovative practice courses must also be adjusted

accordingly, which also should be based on the principle of innovative guidance. It is not suitable for innovation practice courses to organize classes according to class hours and take teachers as the main roles. It requires more flexible time arrangements and methods. So, in the course of "Mobile Development Technology Practice", teachers only organize review meetings and seminars. Most of the course time is given to students to complete the process of creative planning, realization, and discussion.

In the course of "Mobile Development Technology Practice", innovation is first reflected in the ideas of the project because the main work is software design and development. Therefore, the first step of the course is to ask students to finish an ideas collision and set up the goals the project they want to complete. Two class hours is given to the discussion of project planning, arrange for each student to speak out their own ideas and the innovation of their ideas, and to persuade others to accept their ideas. At the same time, during the discussion, other students and teachers also gave suggestions to help students improve their ideas gradually. The process is called ideas collision. At the end, students and teachers respectively evaluated the creativity of the ideas. The comprehensive results will be a part of the final evaluation of the project.

The China-Denmark B&O CD-DIP course of Shanghai Jiaotong University has also made a similar attempt^[1]. This course requires students to carry out the conceptual design of future household appliances, "it requires students to find inspiration from the problems encountered in daily life, from various strange experiences, and from people's needs, and find problems to be solved. It depends on students themselves to seek and observe life, to talk with others, and experience their life. Students are required to leave the classroom and library to find and collect information from the source of life."

Students are required to choose their own projects after the collision of ideas in the "Mobile development technology practice" course. The projects can be based on their own ideas or they can join other creative groups. At the beginning of the project development, students need to arrange the division of labor and plan according to the situation of members, and explain the pre solution of key problems and the innovative technology adopted. When the

project is completed, they need to demonstrate and defend the project in groups. In the defense process, in addition to explain and demonstrate the project, the technical and project management innovation is also be focused on. Guidance and evaluation of Innovative in this part is mainly reflected in technology and project management.

At the same time, in order to stimulate students' entrepreneurial enthusiasm, and further objectively investigate the students' projects and their innovation, according to the characteristics of the course "Mobile Development Technology Practice", students' applications are required to be successfully distributed in China Mobile Communication's mobile application mall^[2]. The user's response in the online shopping mall will affect the final evaluation of the project, which has a larger weight.

1.2 Teacher's duty changes to guide and supervise each period

Under the requirements of emphasizing students' practical abilities and innovation, the main body of innovative practice course becomes students, and the main work of teachers becomes the guidance of innovation, so the responsibility is different from the traditional course. In the innovative practice course, teachers should guide, monitor and supervise the implementation of each period. In the process of students' activities, it is expected to provide innovative guidance and ensure that all activities can be carried out in an orderly manner in accordance with the teaching arrangement. For example, in the course of "Mobile Development Technology Practice", in the planning stage, the teacher's responsibility is to organize creative collision discussions and give his/her own opinion on the innovation of projects. In the creative realization stage, teachers are mainly responsible for supervising the progress of the project, and giving help and suggestions to the problems that arise in the process of the project, and at the same time organizing technical seminars according to the needs of the project. In the presentation stage, as one of the judges, teacher can evaluate the completion and innovation of the project. In the whole process, the teacher is in an auxiliary position. Except for the final project evaluation, the teacher's work appears in the form of suggestions for students' reference, and the right to make decisions is always left to the students.

2 Problems and suggestions

Innovative practice courses are a new class of courses, and some problems that need to be solved in the process of implementation have also emerged.

2.1 Students who take innovative practical courses have no motivation for innovation

According to the current innovation credit system, students have many ways to obtain innovation credit. Generally, students are more willing to participate in various competitions which is not restricted by the course time. In this way, students can work with like-minded partners and get good grades at the same time. Some students who have better skills or wish to take a postgraduate exam will gain innovation credit by participate in teacher's research group to improve their practical ability and research literacy earlier. Because the innovation credit system usually requires all students to obtain a certain number of innovation credits before graduation, innovative practice courses have become courses that some students have to take. However, the students who choose the courses usually are some low-level and uninterested students who can't take part in competitions or do research works. As a result, the embarrassing situation is that innovative practice courses must meet the requirements of innovation, which first requires students to have a great enthusiasm. This has brought great difficulties to the instructors, and many course arrangements are difficult to push on as scheduled. There are also many senior students who take this course to get innovation credit in order to obtain graduation qualifications, which puts a lot of pressure on the instructors to give grades for the students who have not reached the expected goals.

In view of the above problems, we believe that it can be solved in the system design of innovation credit. First of all, innovation is not a necessary ability for every student. Therefore, it is unreasonable to force every student to have innovation. However, innovation education is necessary. Therefore, innovative practice education and guidance courses can be offered, which is required students to complete such credits. Most of the main contents covered by the current innovation credits are not required to be completed by all students. This part of the credits can be considered or required as a reward credit when recommending graduate students and evaluating

scholarships. At the same time, this part of credits can be considered to offset the credits of relevant elective courses.

The content of innovative practice education guidance courses can mainly introduce innovation-related knowledge, background, market, and new technologies. For example, the innovative practice courses of Xiamen University Software College that guide students to participate in competitions, and the "Information Technology Innovation and Training" course offered by Shandong University Software College is also such attempts. The "Information Technology Innovation and Training" course of Shandong University "allows students to understand the current development status and innovation hotspots in the IT field, and stimulates students' passion for creativity and participation through actual case analysis. In-depth discussions and exchanges on innovative models and application backgrounds will broaden students' innovative ideas in the IT field. The course also includes an introduction to basic knowledge of project management, intellectual property, economics and finance, so that students can understand the process from innovation to entrepreneurship^[3]. Such courses should focus on introduction and guidance, and do not require students to practice, because general practice is difficult to produce innovative results for the majority of students. The goal of this kind of course is to stimulate students' enthusiasm for innovation, so that students have the passion to carry out an innovative activity and acquire the corresponding basic knowledge. For students who are not passionate about innovation, they will learn about innovation through this course.

Under this system, innovative practice courses can be used as follow-up courses of innovative practice guidance courses, carried out in accordance with the ideas of guiding innovative practice, and truly attract students with innovative ability and enthusiasm for innovation. The course can also attract students through the guidance and support of students' creativity, so that students can further improve their works and participate in various competitions after the course.

2.2 Evaluation method of the course cannot differentiate students' innovative ability

At present, the evaluation method of many innovative

practice courses adopts the pass or fail grading system commonly used in elective courses. This method is not suitable to check the difference of students' innovative ability, and the students' innovative ability cannot be differentiated in the course evaluation results. Therefore, it cannot stimulate the enthusiasm of students. It is suggested that the hundred mark system should be considered, or the grading system of excellent, good, medium, pass and fail should also be adopted.

In addition, the core of innovative practice courses is innovation, so innovation should be a relatively large proportion in the course final evaluation. Therefore, it is also important to design appropriate evaluation criteria. For example, innovation degree of the project should be part of the final score. However, to evaluate the innovation of the idea and the technology used are indeed difficult, which has high demand for teachers. It can be done in the form of an expert group, which increases the difficulty of course organization.

In addition, in the evaluation system, the weights of creative and difficult projects should be higher, and the final completion degree also should be revised by the weights. This can prevent students from choosing easier projects in order to avoid failure.

At the same time, because innovation is risky, the evaluation system should pay attention to the process of the evaluation^[4], and not judge heroes by success or failure. For projects that have not been completed or failed, if the idea is excellent and the experience and lessons are summarized, and there are also other achievements, then it should also be admitted.

2.3 Difficult to set up the course time span and supervise the process

Since innovative projects may take a long time to think and implement, students may choose to do it in the spare time, such as evening, especially some students are more inclined to plan time by themselves. From the perspective of project completion, innovative practice courses are more suitable for a concentrated period of time, rather than scattered in a few hours on a certain day of the week. However, if the time of innovation practice course is too concentrated, resulting in too short span, such as one month, it is not suitable for students to complete the project. Therefore, it is necessary to extend the time span of the course, and even cross two semesters. However,

it increases the management difficulties, and it is also difficult for teachers to control the progress of the course. What's more, a long time setting may also lead to the problem that students don't have a sense of urgency. Other things would occupy the project time of innovation practice course which results in students rush to work at the deadline. Therefore, the time span of innovative practice course is needed to be carefully determined. If a longer span is selected, corresponding supporting management measures should be followed up to eliminate the problems.

Students' role in project implementation should be reflected in their final course scores. For example, because it is difficult to supervise the process, it is not feasible to use the students' attendance to monitor the progress of the project and observe the performance of students in the project. For innovative projects that need a long time to complete. Therefore, it is difficult for teachers to follow up students' completion process in real time.

2.4 Lack of support of interdisciplinary knowledge

Innovation often comes from the integration of interdisciplinary knowledge. It is of great significance to cultivate interdisciplinary talents^[5]. In order to improve students' innovation ability, it is a better way to expand the innovative practice course to interdisciplines. Innovative practice courses should be able to cross department and interdisciplinary elective courses, and set up a more flexible entry and exit mechanism. At the same time, besides innovative practice courses, some related courses of other disciplines for different majors can be offered to promote the development of interdisciplines.

3 Conclusion

Innovative practice course is a new kind of course in recent years, which shoulders the responsibility of stimulating and cultivating college students' innovative ability. How to teach the innovative practice course well is a matter that needs long-term effort and serious thinking and practice. Focusing on the purpose of guiding innovation as the core of innovative practice course, this paper introduces a series of attempts in the process of course construction, and proposes solutions to the problems existing in the credit system, course evaluation and course organization.

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