Research and Exploration of Online to Offline (O2O) Blended Teaching for Talent Cultivating

Hunyan Peng[1], Yanlong Chen[2,*], Hua Hu[2]

[1]Center for Occupational research, Army Special Operations College, Guilin 541000, Guangxi, China
[2]Mechanical and Electrical Engineering Department, Army Special Operations College, Guilin 541000, Guangxi, China
*Corresponding author. Email: yandragonchan@163.com

ABSTRACT

Since ministry of education has targeted "Golden Courses" as one key construction project, a new round of reform for teaching model is looming. Due to unique advantages of the online to offline blended teaching model, it is increasingly being used to practice. This paper comparatively analyzes characteristic of current class and superiority of online to offline (O2O) blended teaching model. Based on active learning and higer-order teaching goal, application of the online to offline blended teaching for talent cultivating is deeply explored. Moreover, an improved design of O2O blended teaching, which can be used for reference is proposed.

Keywords: Teaching model, blended teaching, online to offline, higher education

1. INTRODUCTION

Rapid development of information technology has the unprecedented impact on educational world. The conventional way that class is taught mainly by teacher is more and more difficult to meet the increasingly abundant demands of students [1, 2]. In 2018 the Chinese ministry of education issued the notice about taking serious measures to implement the spirit from new-times national higher education working conference. In this document, one project named "double ten thousand" is proposed, which is aimed at build a batch of "Golden Courses".

In recent years, universities all around the world have adopted advanced teaching model, such as flipped classroom, MOOC etc. to a variety of discipline and specialty [3, 4]. Researches reveal that Online to Offline (O2O) blended teaching [5] can make better use of teaching materials, social resources and industry information. O2O overturns the long-time dominant teaching model "teaching as centerpiece" and it truly realizes "study as centerpiece", which is more suitable for appealing personality learning nowadays, thus it receives extensive attention from educational circles.

2. PROBLEMS IN CONVENTIONAL CLASSROOM TEACHING

Domestic colleges and universities have employed conventional model "teaching as centerpiece" as dominated teaching model in classroom teaching until now. The achievement of teaching goal mainly depends on classroom instructing, which is always cooperated with preparation of class, practice and consolidation after class. It does not manifest the theory of "study as centerpiece", thus it leads following problems from two aspects.

2.1. Cognitive Objective Is Relatively Low

Bloom´s cognitive level model [6] is shown in Fig. 1. Teaching cognitive objective can be categorized into six kinds from lower-level to higher-level: remembering, understanding, applying, analyzing, evaluating and creating. Among them, remembering, understanding and applying belong to lower-order conceptual work while analyzing, evaluating and creating belong to higher-order conceptual work.

Teacher mostly aims at lower-order goal such as remembering, understanding and applying to carry out teaching in traditional classroom teaching. But the higher-order goal such as analyzing, evaluating and creating are accomplished by students themselves after class. Student usually can not get effective guidance outside classroom, which results that higher-level goal is difficult to achieve. Therefore, there still exists large gap between teaching and professional talent cultivating.
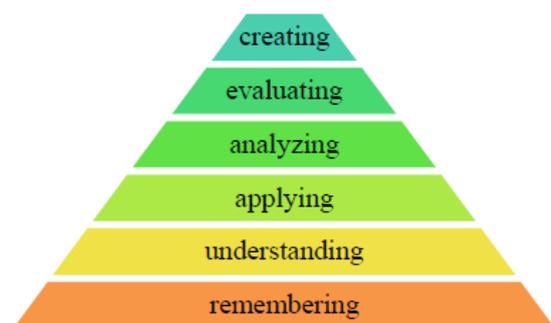

Figure 1 Bloom´s cognitive level model
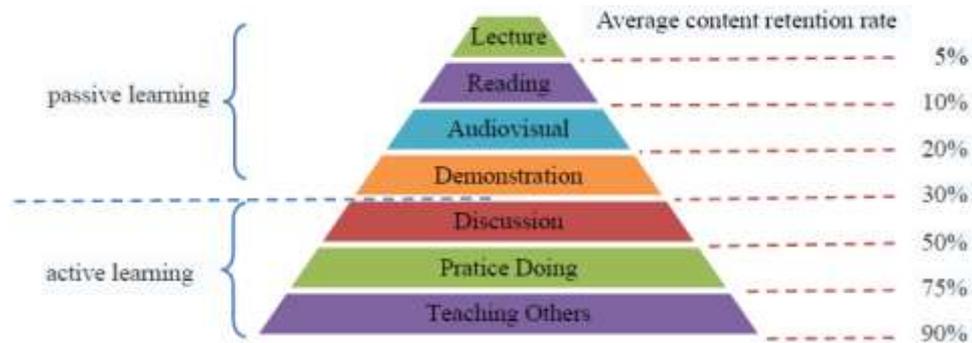
Figure 2 Edgar Dale´s learning pyramid model

2.2. *Average Content Retention Rate Is Relatively Low*

Employing "teaching as centerpiece" classroom leads students to stay in passive learning state for long-term. According to Edgar Dale´s learning pyramid model [7] shown in Fig. 2, average content retention rate of lecture after 24 hours is only 5%, while maximus value of the other passive approaches is just 30%.

Each college or university mostly utilizes lecture to organize science and culture course at present, while reading, audiovisual and demonstration are also collaborated. Teacher are acted as dominators in class while students stay in passive state for long-term, which dramatically influences knowledge absorption. As for practical course for most universities or colleges, the active learning methods are widely utilized. It is natural think that average content retention rate is up to 50% at least, since active learning such as discussion, practice doing and experience sharing are applied. However, subjected to equipment amount and class scale, average time for active learning is less. The average content retention rate is less, thus the content kept in mind is still limited. Therefore, cognitive goal remains at lower-level stage. The teachers are always busy from beginning to the end during classroom teaching, while the students are usually scatterbrained with unclear learning objective. Lack of study drive finally influences generative capacity of specialized talents.

3. CHARACTERISTIC OF ON-LINE COURSE

Under the background of rapid development of information technology and multi-media science, advantages of on-line courses are recognized extensively [8, 9]. There are 22 popular on-line course platforms in China at the moment. Until February of 2020, the total amount of uploaded courses is 240 thousand and more. The principal cause why on-line course springs up is that it has the characteristic of large-scale, openness, autonomy, individuation, which are obviously different from traditional education. Although on-line course has preponderance beyond comparison with traditional course, which helps it develop rapidly in domestic area. It also exposes novel problems during operating process: (1) The courses are lack of powerful constraint, which leads that students are difficult to carry on if faced with trouble thus it has an extremely high rate of dropout. (2) It is hard to grasp the situation during classroom, since expression, motion etc. are not easy to convey exactly, which leads that degree of teacher-student interaction is low. (3) Students are impossible to operate equipment directly while they can just view and emulate on-line, and teachers also cannot test the practical ability of them, which leads that on-line course is not suitable for practical operation.

4. CHARACTERISTIC AND ADVANTAGE OF BLENDED TEACHING

O2O teaching model consists of two parts: on-line teaching and off-line teaching [10, 11]. It lays emphasis on organic integration between network information and classroom teaching in order to reaching higher goal furthermore.

O2O blended teaching model overturns the long-term master-slave relation between teacher and student. Student watches video of knowledge point etc. before class and accomplishes on-line test. Teacher prepares instructional design according to pre-class feedback from student. The classroom teaching is specifically arranged then student and teacher can discuss together. The post-class task for improvement is assigned based on classroom status. This model well considers both global learning and personalized learning, which fully reflects the teaching concept of "learning as the subject, teaching as the guidance". Therefore, it can make full use of active learning approaches from Edgar Dale´s learning pyramid model to increase average content retention rate. It is in a

better favor of reaching higher-order target from Bloom´s cognitive level model. Moreover, it has the following advantages: More reasonable to utilize on-line resource, more outstanding to learn individually, more effective to operate in practical courses, clearer to obtain learning goal. To sum up, it is likely to solve the problems existing in current class.

5. IMPLEMENTATION ADVICE TO O2O BLENDED TEACHING

5.1. Application Effect of Other Institutions

Medical college of Shanghai Jiaotong University applied O2O to teaching. The students have higher receptivity and degree of satisfaction, which distinctly improves teaching efficiency and quality.

Mechanical design experiment of Liaoning University of Technology highly helps student to understand and master knowledge via O2O. Finally, students acquire active

learning, thus the practical ability and innovation ability are all comprehensively upgraded.

5.2. Implementation Advice

There is general experience from local universities and colleges while they are exploring O2O teaching model: connect with reality to modify it, do not copy! Student in military colleges own different learning motivation, learning ability, learning time, hardware condition, management model, which are quite different from local universities. Experience from local universities should be paid enough attention, but it is must be avoided that form or appearance is similar but connotation is rather far, which may result teaching quality to decrease.

The O2O teaching approach can use model of Shanghai Jiaotong University for reference. Considering the actual situation that military student pre-class learning ability is limited, desire of expression in class in not strong and tasks are many after class etc., it is modified as shown in Fig. 3.
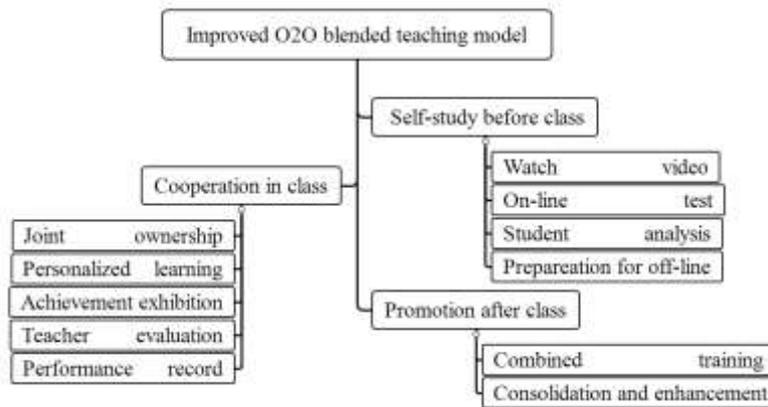

Figure 3 Improved O2O blended teaching model

5.2.1. Self-study before class

Teacher selects audio and video from "Icourse163" etc. or shoot videos themselves. Student learn theoretical knowledge via audio and video prepared elaborately by teacher and accomplishes on-line test. Then the statistical analysis is generated and can be feedbacked to teacher. Teacher analyzes knowledge mastery degree of student based on test results and adjusts instructional design according to studying present condition. The connect between on-line teaching and off-line teaching is established in order to lay a foundation for next class teaching.

5.2.2. Cooperation in class

Teacher optimizes instructional design according to pre-class feedback. Then time is well distributed aimed at student mastery degree of knowledge and the class is more refined. Student fully expresses opinion of their own. Therefore, off-line classroom has a joint ownership between teacher and student. The classroom is no longer determined by teacher's say or conducted with cramming education. It is suggested that teacher should clearly and definitely build scenes and give specific tasks centering on knowledge point. Students discuss in group pre-divided to learn collaboratively. Teacher listens and analyzes progress of each group to judge whether knowledge is applied appropriately. So, guidance can be implemented according to discussion of each group in order to reach

teaching goal. Teacher can also assign exploratory tasks centering on key and difficult points. Thus, student can one-to-one talk to teacher and teacher can provide individualized guidance. Teacher can also employ traditional teaching methods such as lecture to explain common problems, typical doubts, key and difficult points. Student achievement can be exhibited at pudding time when students can exchange their view and analyze. Then teacher evaluate achievement and explain core knowledge and clear up doubts related to the task. Student performance is needed to record to produce objective score and level.

5.2.3. Promotion after class

Teacher assign task after class should place emphasis on combined training, consolidation and enhancement in order to promote thinking ability and problem-solving capability. Teacher provides reference examples with matched material to encourage student innovate. The positive feedback is given to student to enhance psychological identification, which can arouse enthusiasm, thus it is beneficial to build integrated knowledge network in student's brain.

6. SUMMARY

The O2O teaching model highly meets the education demands of Bloom´s cognitive level model and Edgar Dale´s learning pyramid model, which makes learning is more personalized and more effective, it is helpful to achieve higher-level cultivating target and suck knowledge into student's mind. Military academies can learn from foreign experience of domestic and overseas universities to improve O2O teaching model which is more satisfactory to cultivate specialized talents. Therefore, it is hopeful to comprehensively upgrades teaching performance and education effect, integrally promote knowledge, ability and quality of specialized talents

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REFERENCES

[1] S.E. Miller, T.A. Topple, Thinking and Thinking About Thinking: A Qualitative Study of Learning in a Process-Centric Teaching Model, Journal of Social Work Education 56 (2019) 115–130.

[2] M. Guerra, F. Bassi, J.G. Dias, A Multiple-Indicator Latent Growth Mixture Model to Track Courses with Low-Quality Teaching, Soc Indic Res 147 (2020) 361–381.

[3] A.R.V. José, S. Halawa, S. Slama, J. Reich, Using multi-platform learning analytics to compare regional and global MOOC learning in the Arab world, Computers & Education 146 (2020) 37-48.

[4] X. Peng, Q.M. Xu, Investigating learners' behaviors and discourse content in MOOC course reviews, Computers & Education 143 (2020) 67-75.

[5] G. Isherwood, K. Taylor, G. Burnside, R. Fitzgerald, N. Flannigan, Teaching orthodontic emergencies using the "flipped classroom" method of teaching—A mixed methods RCT, Eur J Dent Educ. 24 (2020) 53-62.

[6] S. Zorluoglu, A. Kizilaslan, M.D. Yapucuoglu, The analysis of 9th grade chemistry curriculum and textbook according to revised Bloom´s taxonomy, Cypriot Journal of Educational Sciences 15 (2020) 9-20.

[7] K. Masters, Edgar Dale's Pyramid of Learning in medical education: Further expansion of the myth, Med Educ. 54 (2020) 22– 32.

[8] S.Z. Shannon, W.T. Julianne, H.E. Elizabeth, K.B. Brittany, R. Keara, Unified Protocol for the Transdiagnostic Prevention of Emotional Disorders: Evaluation of a Brief, Online Course for College Freshmen, Behavior Therapy 2 (2020) 7-14.

[9] B.B. Zheng, C.H. Lin, J.B. Kwon, The impact of learner-, instructor-, and course-level factors on online learning, Computers & Education 150 (2020) 38-51.

[10] M.M. Thomson, T.A. Walkowiak, A. N. Whitehead, E. Huggins, Mathematics teaching efficacy and developmental trajectories: A mixed-methods investigation of novice K-5 teachers, Teaching and Teacher Education 87 (2020) 29-53.

[11] R. Spencer, J. Sinno, K. Hatfield, M. Biderman, N. Doria, M. Numer, Exploring Top Hat's Impact on Undergraduate Students' Belongingness, Engagement, and Self-Confidence: A Mixed Methods Study, Journal of Research on Technology in Education 61 (2020) 25-35.