Research on the Blending Learning Effect Evaluation System of Military Professional Education

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Abstract. By defining the concepts of Military Professional Education, Blending Learning and teaching effect evaluation, a Blending Learning effect evaluation index system of Military Professional Education was constructed from the perspectives of expert evaluation and student evaluation based on student-centered learning theory and deep learning theory. The evaluation index system included 7 level I indexes and 26 level II indexes which had the advantages of being comprehensive, non-overlapping and easy to obtain. By using this index system, a virtuous circle of guiding teaching, evaluating teaching, adjusting teaching and improving the effect can be realized.

Keywords: Blending Learning · Teaching Effect Evaluation · Military Professional Education

1 Problem Presentation

As a form of teaching organization, online and offline Blending Learning, driven by the current concept of "Internet plus education", has shown a trend of blowout development [1–3]. Military Professional Education institutions in transition are also actively pursuing educational reform focusing on Blending Learning to meet their training needs with more precise job orientation, more outstanding ability needs and more training levels. However, the current situation is that the Blending Learning model that accurately meets the needs of military Professional education and training is still in the exploratory stage. The lack of teaching evaluation with the functions of evaluation guidance, discrimination and selection, feedback and consultation and decision-making makes the Blending Learning in Military Professional Education colleges become rootless wood and water both in content development and teaching practice. At the same time, because of the differences between military and local training objectives, knowledge differences between disciplines and specialties, motivation differences between front-line educators in their choice of Blending Learning, and individual differences in the problems faced in teaching, these differences have resulted in the absence of an evaluation system that is "one-size-fits-all". Therefore, it is urgent to build a scientific, reasonable and operable

Blending Learning effect evaluation index system based on the training needs of Military Professional Education through forward-looking research to guide the current teaching practice and achieve a virtuous circle of guiding teaching, evaluating teaching, adjusting teaching and improving the effect.

2 Concept Definition

2.1 Military Professional Education

Military Professional Education is a kind of education that is guided by Position requirements and oriented ability development on the basis of higher education. It is the starting point and foothold of Military Professional Education to cultivate compound commanders with the ability to operational command, organize training, manage education and political work under the information conditions, which requires that the training objectives of Professional Education have clear job orientation, diversity, dynamics and development, especially the cultivation of practical ability, and attach importance to the trinity quality structure of knowledge, skills and attitude. Through the Professional Education, students can obtain the basic skills, post quality, innovation spirit, pioneering ability, and post flexibility required for the post [4–7].

2.2 Blending Learning

In a broad sense, Blending Learning is a mixture of various learning theories, teaching media and teaching models, aiming to achieve the best teaching effect. In a narrow sense, blending teaching refers to the mixing of face-to-face learning and online autonomous learning. However, too broad definition is easy to make the research of Blending Learning effect evaluation difficult to be refined, and also easy to cause misunderstanding and debate. The narrow definition also separates traditional offline teaching from online teaching, which deviates from the core requirement of organic integration in connotation. In order to avoid the generalization and simplification of the concept of Blending Learning, this paper defines Blending Learning as a teaching mode that organically integrates face-to-face teaching between teachers and students and online autonomous learning of students by comprehensively using various teaching methods and information technology, giving full play to the advantages of traditional offline teaching and modern online teaching, with the purpose of improving the teaching effect[8–10].

2.3 Teaching Effect Evaluation

The effect refers to the systematic or unitary result of its causes or other reasons or multi factor superposition on specific things under given conditions. The teaching effect refers to that the educator, under a certain condition or environment, implements educational behavior to the teaching object within a period of time, so as to make certain changes to the teaching object. The evaluation of teaching effect is to judge the value of this change. Staver Cain, a famous American education evaluation research expert, believes that "the main purpose of evaluation is not to prove, but to improve". Therefore, teaching effect evaluation emphasizes the three core elements of established goals, measured standards and the basis for promoting improvement.

2.4 Evaluation of Blending Learning Effect of Military Professional Education

According to the above understanding of the concepts of "Military Professional Education", "Blending Learning" and "teaching effect evaluation", this paper defines the Blending Learning effect evaluation of Military Professional Education as: teaching managers build an evaluation index system based on the training objectives of Military Professional Education, combined with the characteristics of training objects, training environment and other factors, and systematically collect information on teaching activities, measure the effect of Blending Learning through quantitative and qualitative methods, and finally make a value judgment. At the same time, they can find the advantages and disadvantages of Blending Learning and provide guidance for subsequent improvement [11, 12].

3 Theoretical Basis

3.1 Student-Centered Learning Theory

The student-centered learning theory integrates two educational concepts: personalized learning and competency-based learning. Personalized learning refers to learning according to the needs of students themselves, and its purpose is to help each learning individual achieve their goals. Competency-based learning refers to that students must have certain ability to master, use and create knowledge before entering the next stage of learning, rather than time-based learning or knowledge-based learning. Because Blending Learning organically combines online self-study and offline teaching, it provides different ways for students to complete their learning under the guidance of unified training objectives, and also provides good mode support for students to achieve personalized learning and competency-based learning.

3.2 Deep Learning Theory Focusing on Higher-Level Thinking

Bloom divides the dimensions of cognitive process into six levels: memory, understanding, application, analysis, evaluation and creation. Memorizing, retelling or simply describing knowledge belongs to shallow learning activities, while deep learning theory focuses on higher-level thinking activities such as application, analysis, evaluation and creation, emphasizing the comprehensive application of knowledge and creative problem solving. The development of higher-level thinking ability is an important goal of Blending Learning. It is expected to change the learning opportunity and scene of shallow knowledge learning and knowledge internalization through the online and offline teaching strategy, so as to promote the improvement of students' higher-level thinking ability.

4 Construction of Blending Learning Effect Evaluation Index System for Military Professional Education

4.1 Principle of Index System Construction

There are three important principles for the establishment of the index system. First, it is comprehensive. A scientific index system should reflect all aspects of the status of the evaluation object according to the evaluation purpose. If the index system is not comprehensive, it is impossible to make an overall judgment on the evaluation object. Second, there is no overlap between indexes. Overlapping indexes will lead to deviation from the actual situation. Third, indexes are easy to obtain. The data needed for calculating indexes should be easy to collect, otherwise the index system cannot be applied.

4.2 Evaluation Index System for Blending Learning Effect of Military Professional Education

Based on student-centered learning theory and deep learning theory, this paper constructs a Blending Learning effect evaluation index system for Military Professional Education from the perspectives of expert evaluation and student evaluation, as shown in Table 1.

1) *Expert evaluation index:* Expert evaluation mainly evaluates the effect of Blending Learning from the four dimensions such as teaching content, teaching resources, teaching process and position matching degree. It focuses on the evaluation of the position orientation, the cohesion between online learning and offline teaching, the participation of teachers for online learning, the match degree of knowledge types and teaching methods, and the trinity quality structure of knowledge, skills and attitudes.
2) *Student evaluation:* Student evaluation mainly includes three dimensions: learning experience, learning achievements and learning satisfaction. It focuses on the key issues such as students' evaluation of learning resources, methods, teachers' ability level, and the gap between learning expectations and actual gains.

3) *Evaluation index standard.*

Position orientation: Focusing on the hot spots, difficulties and problems that need to be solved in the actual combat, the teaching content based on the post demand or task should be selected, and be close to the troops and the actual combat.

Relevance between theory and practice: The teaching content should couple theory and practice closely with paying attention to the guiding role of theoretical knowledge on practical operation, and the comprehensive application of practical operation on theoretical knowledge.

Online learning resources: The teaching provides rich learning resources including courseware, teaching plan, teaching video, electronic teaching materials, test question library, case library, etc.

Offline practice environment: Starting from the actual combat, a practical teaching environment should be constructed close to the actual combat to support the teaching of different practical subjects.

Table 1. The evaluation indicators for Blending Learning effect of Military Professional Education

Evaluation category	Level I indexes	Level II indexes
1 Expert evaluation	1.1 Teaching content	1.1.1 Position orientation
		1.1.2 Relevance between theory and practice
	1.2 Teaching resources	1.2.1 Online learning resources
		1.2.2 Offline practice environment
		1.2.3 Expand resources
	1.3 Teaching process	1.3.1 Cohesion between online learning and offline teaching
		1.3.2 Participation of teachers for online learning
		1.3.3 Match degree of knowledge types and teaching methods
		1.3.4 Timeliness of learning process management
	1.4 Position matching degree	1.4.1 Cognitive achievements
		1.4.2 Practical achievements
		1.4.3 Emotional achievements
		1.4.4 Literacy achievements
		1.4.5 Personalized development
2 Student evaluation	2.1 Learning experience	2.1.1 Learning contents
		2.1.2 Learning resources
		2.1.3 Web-based learning
		2.1.4 Online and offline collaboration
		2.1.5 Teaching organization
		2.1.6 Teaching level of teachers
	2.2 Learning achievements	2.2.1 Knowledge system construction
		2.2.2 Ability and quality improvement
		2.2.3 Individual specialty development
		2.2.4 Professional identity
	2.3 Learning satisfaction	2.3.1 Expectation gap
		2.3.2 Teaching suggestions

Expand resources: Relevant learning materials should be provided to support students' personalized learning and knowledge expansion.

Cohesion between online learning and offline teaching: According to the characteristics of the content, the online and offline teaching content shall be divided as a whole, and the online learning situation of students must be grasped accurately so as to timely adjust the key and difficult points and teaching strategies of offline teaching.

Participation of teachers for online learning: Teachers should review online assignments or tasks timely and provide feedback, and at the same time they should guide the students' online learning process with question answering and discussion, etc.

Match degree of knowledge types and teaching methods: Appropriate teaching methods and strategies should be selected for different knowledge types such as declarative knowledge and procedural knowledge.

Timeliness of learning process management: Teachers should be concerned about the progress and effect of students' online learning, and timely supervise and guide students with slow learning progress and insufficient knowledge.

Cognitive achievements: Students should be familiar with the principles, facts, techniques, procedures or processes emphasized in teaching.

Practical achievements: Students should reach the level of operation skills, techniques or skills emphasized in teaching, including comprehensive application of learning and skills.

Emotional achievements: Students should have a high degree of recognition for their posts and be filled with enthusiasm for future posts. Their learning autonomy should have changed significantly.

Literacy achievements: Students should have the high-level thinking such as memory, retelling, application, analysis, evaluation and creation and the ability of autonomous learning and collaborative inquiry.

Personalized development: Students at different levels should have their own benefits, and their personal characteristics should be fully developed.

Learning contents: The learning contents are practical and closed to the actual position.

Learning resources: Learning resources are rich and comprehensive which can meet the needs of self-study.

Web-based learning: Teachers' guidance is timely and effective, and peer cooperation and communication are good.

Online and offline collaboration: The knowledge of online and offline learning is mutually supported and the content is organically integrated.

Teaching organization: Teaching methods are proper, reasonable and teaching organization is scientific.

Teaching level of teachers: Teachers have a serious and responsible teaching attitude, a high level of knowledge, timely and effective communication, appropriate teaching methods and reasonable teaching arrangements.

Knowledge system construction: Through theoretical and practical learning, students should construct a knowledge system of courses or specialties, clarify the job requirements and responsibilities, and have a deeper understanding of the future job tasks and implementation.

Ability and quality improvement: The ability to actively explore knowledge and unknown fields should be cultivated. The ability to solve complex problems and the professional quality should be improved effectively.

Individual specialty development: Teachers respect the personality development of students and give play to their own strengths in the process of learning.

Professional identity: Students are firm in their ideals and beliefs and have a sense of identity with their future jobs.

Expectation gap: The difference between the "expected level standard" and the "actual results" should be small, and the learning satisfaction is high.

Teaching suggestions: The suggestions and opinions on teaching content, teaching methods, teaching organization, teaching resources, teachers' teaching, etc.

5   Conclusion

On the basis of defining the concepts of Military Professional Education, Blending Learning and teaching effect evaluation, this paper constructs a Blending Learning effect evaluation index system of Military Professional Education based on student-centered learning theory and deep learning theory. In the next step, it will be tested, revised and improved in teaching practice to provide data support for accurate evaluation of Blending Learning effect and guidance of teaching implementation.

References

1. Feng Xiaoying, "A Literarure Review on Blended Learning: Based on Analytical Frame-work of Blended Learning," JOURNAL OF DISTANCE EDUCATION, August 2018. pp.13–24.
2. Lei Quanlong, "Research on the influencing factors of mixed teaching quality," Education & Equipment Research, October 2019. pp.41–44.
3. Wang Yan, "Practice, Reflection and Exchange:Focusing on International Hybid Learning Research⼀ Review on the third ICHL," JOURNAL OF DISTANCE EDUCATION, May 2010. pp.7–11.
4. Xiao Xiaoyong, "A study on the overall transformation and innovation of post education in military colleges and universities, "Continue Education Research, May 2012. pp.34–35.
5. Du Jiang, "Enlightenments of MOOC on Optimizing the Teaching Mode of Military Vocational Education," Continue Education Research, July 2015. pp.35–37.
6. Yao Linghong, "Research on MOOC Teaching Mode of Military Vocational Education," Higher Education
7. Shu Chongsheng, "MOOC's Reference and Inspiration to the Curriculum Reform of Vocational Education in Military Colleges and Universities," Continuing Education, April 2015. pp.73–75.
8. Chen Suanrong, "Practical significance and current problems of mixed teaching in colleges and universities," Journal Higher Education, July 2016. pp.15–17.
9. E Yuanyuan, "A study of evaluating practical teaching quality based on BP neural network approach," LABORAT0RY SCIENCE, October 2009. pp.8–11.
10. Wang Yan, "Exploration of Assessment System and Rating Scales Based on the Blended Learing Mode," Journal of Changchun Normal University, vol (37), pp.163-167, November 2018.
11. Qian Yuanping, "Study on the Evaluating Mechanism of Blended Teaching——With the Provincial Online Open Course: Mechanical Engineering Mechanics, as an Example," Journal of Shazhou Professional Institute of Technology, vol.21, pp.13-16, September 2018.
12. Pei Xiaoqin, "Research on the Performance Evaluation System of M OOC-based Blended Teaching and Learning," Future and Development, November 2015