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Blended Learning Facilitated Adult Training: A Case Study on Blended Learning and Application in Agricultural Meteorology Course

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Abstract: This paper discusses the connotation and significance of blended training and introduces the process of implementing blended training. This paper elaborates the case of implementing blended training, and finds out the highlights, advantages and challenges of blended training through the case. Finally, it discusses how to implement blended training in on-the-job training to realize the combination of online and offline.

Keywords: Blended training, Blended teaching, On-the-job training, Hybrid learning, Flipped learning

1. The concept of blended training

Blended training is to combine the advantages of traditional face-to-face training with the advantages of web-based learning. It should not only play the leading role of teachers in guiding, inspiring and monitoring the teaching process, but also fully reflect the initiative, enthusiasm, and creativity of students as the main body of the learning process. BadrulH.Khan (2002), a US scholar, proposed the Eight-Dimensional Framework of blended learning, pointing out that since each student has different learning requirements and performance, training institutions must use mixed programs in training strategies, so that appropriate content can be taught to appropriate people at appropriate time and under appropriate arrangements. According to domestic scholars Ronghuai Huang, the purpose of blended learning is to integrate the advantages of classroom teaching and web-based teaching, comprehensively adopts the mass instruction form mainly led by teachers, the group learning form based on the concept of cooperation and the distance teaching form mainly led by independent learning, and comprehensively use different learning theories, different technologies and methods and different application ways to implement teaching. Professor Fuyin XU pointed out that the teaching view emphasizes the interaction between teachers and students, the active construction of knowledge by learners, and the learning in activities and problem-based learning in the information age.

Blended training is the design of blended training strategy based on the core of achieving training objectives, which is carried out at three levels: online and offline, culture and training, and learning and work. Its main feature is to widely choose the use of remote platform, practical training, face-to-face training and learning resources; At a higher level, we should make full use of "training" to apply the learning content to the simulation practice. In the deeper field, the effective use of "action learning" makes the staff training directly combine with the actual work, solves the problems existing in the management, production, and operation of the organization, promotes knowledge management, and realizes the continuous improvement of the organization.

2. Implementation process of blended training

Skills training program is suitable for blended training. General skills learning can be completed online, and specific problems can be solved in centralized teaching. Job adaptability training is also more suitable for blended training. Basic theoretical knowledge can be learned online, and the knowledge and skills with strong practical ability can be learned in centralized training.

2.1 Define the tasks of carrying out blended training

The main tasks of carrying out blended training are as follows: First, to strengthen teachers' understanding of distance platform and the concept of blended training, the key is to recognize the advantages of distance training in blended training, promote teachers' attention to blended training mode, and encourage teachers to actively invest blended training mode into practice. The second is to improve the blended training ability of trainers and training managers based on the remote platform, including the ability to design and implement blended training programs. Third, sort out the process of blended training, and establish the system and mechanism to promote the effective development of blended training.

2.2 Standardize the process and implement the systematic blended training design

In the development and design process of each training project, systematic blended training design is implemented according to three stages of "before training, during training and after training" and there are five steps of blended training, that is demand analysis, blended strategy design, curriculum development, training implementation and training summary.

Blended training is based on the realization of training objectives. In the implementation of blended training project, a variety of training methods are used to ensure effectiveness, including a new blended training model integrating "face-to-face learning, online learning, on-site learning and action learning". Among them, face-to-face training mainly adopts problem-oriented training, that is, the trainer organizes the students to discuss and summarize the problems before the training, and the experts give lectures on the problems during the teaching. Online learning takes distance courses according to the seminar theme. On-site teaching is based on face-to-face teaching to deepen theory and expand knowledge, exchange problems solution with experts, see the actual operation of the business on the site, find and solve problems on the site. Action learning is mainly through the participants to solve the practical problems encountered in the work, learners reflect on their experience, learn from each other and improve.

Blended training should start from practical learning and implement effective integration of multiple mixed levels. Different blended training projects, aiming at different training objects, choose different links to highlight the mixed depth and mixed emphasis, strengthen the characteristics of blended training, and give full play to the unique advantages of blended training.

2.3 Make good connections and a real systematic blended implementation

First, face-to-face teachers need to understand distance training, especially the learning resources provided by the platform and the main functions of the platform. Starting from the practice of blended training, there are several problems affecting the promotion of blended training. They are the practice of courseware production, the functions that can be adopted by the blended training provided by the distance training platform, the quality and ability of the trainers. Through the analysis, it is found that there are three main reasons. First, the objective and planning of blended training is not clear enough; Second, trainers know little about the functions of blended training provided by remote platforms; Third, the trainers are not proficient in the operation methods of the main steps that affect the quality of blended training.

The second is to develop a systematic blended training plan. Every year, we make teaching and research plans, remote courseware development plans, and departmental hybrid training project plans for blended training. Through training, research, practice, we promote problem solving and goal realization.

Third, after the completion of the blended training project, the problems and experiences of hybrid training should be exchanged. Training and discussion should be focused on the available functions of remote platform blended training, alternative ways of blended training, sharing and exchange of blended training experience and other topics.

3. The practice of blended training

3.1 Basic Information

Based on the concept and method of blended training, China Meteorological Administration Training Centre held the second and third training program of basic knowledge and technology of agricultural meteorology. The course content focuses on the basic theories and principles of the discipline. The network course used is based on the Principles of Agricultural Meteorology compiled by Feng Xiuzao, Tao Bingyan et al., and developed by China Meteorological Administration Training Centre and Nanjing University of Information Science and Technology. The training content is mainly for the first-line service personnel of agricultural meteorology at municipal and county-level grass-roots stations all over the country. At the end of the study, they need to take the online examination, and the examination results will be used as the main basis for participating in the relevant face-to-face training qualifications organized by China Meteorological Administration Training Centre.

The distance training of basic theories and principles of agricultural meteorology lasted nearly 11 weeks. In order to answer the students' questions and improve the learning effect, three pre-test counseling and question-answering activities were organized by using the synchronous classroom of China Meteorological Distance Education Platform during the training. In the Q&A process, the students asked the teachers questions in real time through the audio and video function and text chat function in the synchronous classroom. The teacher not only answered the students' questions, but also explained the key and difficult points of the training course and selected 80 typical questions for targeted analysis and explanation based on the examination knowledge points. Besides, during the training, learning support services were provided by interactive communities, telephone calls and QQ learning groups. Two agricultural meteorological business experts were invited to join the QQ group to provide learning support, which guided the students to actively participate in teaching activities and improve their learning initiative.

In order to evaluate the students' learning situation and training effect, after the training, the students who meet the requirements of the class hours are organized to take online examinations. Taking the method of randomly selecting questions from the test bank, the scores of students showed obvious normal distribution. Among them, 113 students scored less than 60 points, accounting for 12.5% of the total number of students, and 120 students scored more than 85 points, accounting for the total number of students 13.3%. Most of their scores are in the 70-79 range.

After the examination, the results of the trainees shall be exported and provided to the face-to-face training teachers. When the notice of face-to-face training is issued, the training objects shall be the first-line service personnel of agricultural meteorology at the municipal and county level in each province who have participated in the online training of basic theories and principles of agricultural meteorology organized by CMATC and passed the examination. Through face-to-face training, students can further systematically understand and master the basic concepts and principles of agricultural meteorology as well as the common technologies and methods of agricultural meteorology business and improve their ability to solve practical problems in agricultural meteorology business service.

3.2 Highlights and advantages of blended training

3.2.1 Arouse the learning enthusiasm of students, and the professional basis of face-to-face training objects is relatively consistent

Distance training, as the pre-training of face-to-face training, is a useful attempt of blended training of China Meteorological Administration Training Centre. Distance training examination score is an important threshold for obtaining face-to-face training qualification. On the one hand, this approach can stimulate students' learning motivation and arouse students' initiative and enthusiasm in distance learning. On the other hand, it can screen out students at the same level of professional knowledge for

face-to-face teaching. The professional basis of students is relatively at the same level, so it is convenient for face-to-face teachers to design and develop training courses and improve the training effect.

3.2.2 Blended training not only mixes training forms, but also fully mixes training content

The combination of distance and face-to-face teaching is not only reflected in the training form, the training content is also fully connected. Considering that most of the personnel engaged in the front-line service of agricultural meteorology at grassroots stations are not majored in agricultural meteorology, and the basic theoretical knowledge of agricultural meteorology is relatively weak, the distance training focuses on agriculture basic theories and principles of meteorology, while face-to-face training focuses on the application and practice of agricultural meteorology. As the trainees said: "Distance training learning is a warm-up, is to have a basic outline and preliminary understanding of agricultural meteorology. Face to face training is to strengthen cognition and specific applications of agricultural meteorology. "

3.2.3 Systematic courses, professional teachers ensure the quality of online courses

The online course of this training is an undergraduate course developed by China Meteorological Administration Training Centre and Nanjing University of Information Science and Technology in the form of remote training. The course is edited into more than 150 small courseware, each is about 20 minutes according to the knowledge points. The course is divided into seven chapters, which is convenient for students to learn systematically according to the knowledge points at any time. In addition, the course of learning materials are complete, syllabus, exam syllabus, teacher lecture notes, electronic textbooks, Q&A materials are available for download and is convenient for offline review.

3.3 Deficiency and reflection of practice

The blended training of basic knowledge and technology of agricultural meteorology is a preliminary attempt of blended training, which is only based on the mixture of teaching methods and teaching content. In the process of implementation, online learning and face-to-face teaching are still separated, and there is still some distance from the real blended training. Blended training requires systematic teaching design and blended strategy design, and the face-to-face and remote teaching content is systematically arranged according to knowledge points, the difficulty degree and the teaching requirements. At the same time, the relationship between remote and face-to-face teaching is closely linked to each other. The learning materials and offline tasks of face-to-face teaching can be completed by using the remote platform, and the learning management record of students can be completed at the same time. To do blended training well, first of all, the business barriers of remote and face-to-face teaching should be broken, and at the same time, systematic design and evaluation should be strengthened, so as to give full play of the advantages and benefits of blended training.

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