Research on the Evaluation Method of Intelligent Unmanned Equipment Innovation Students

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Abstract. Intelligent unmanned equipment innovation specialty focuses on cultivating military talents with high-quality applied talents in the field of intelligent unmanned equipment, which is a very important specialty in the development of national defense. This paper puts forward a student assessment system that adapts to the characteristics and training needs of the professional course group. The basic principle is " cultivating people by virtue and educating people for war, " and the five-step assessment operation process is " bold thinking, hands-on, hands-on, for war use and comprehensive evaluation. "

Keywords: Intelligent, Unmanned, Student assessment, Evaluation system.

1 Introduction

The intelligent unmanned equipment innovation specialty focuses on the major national strategic needs such as intelligent equipment and advanced manufacturing, and cultivates professional military talents in the field of intelligent unmanned systems with profound theoretical basis, system overall thinking and innovative practice ability. With artificial intelligence technology as the core and unmanned systems as the platform, it focuses on the basic scientific problems of perception and interaction, learning and understanding, reasoning and decision-making, control coordination and other links, so that students can master the overall design, perception and cognition, information processing, collaborative control, system reliability and other related theories and key technologies of intelligent unmanned systems, and promote the innovation and development of military equipment. It is an important part of the intelligent and unmanned development of military equipment at the present stage. Among them, student assessment is one of the important contents of teaching quality assessment [1]. Studying the assessment and evaluation methods of students in this major plays a very important role in promoting the development of students, professional development, and the development of military equipment.

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2 Evaluation System

The assessment system for students majoring in intelligent unmanned equipment innovation should be based on the characteristics and training needs of the professional curriculum group, divide the curriculum types, and establish a scientific and reasonable student assessment system [2]. It is necessary to take " cultivating people with morality and educating people for war " as the basic principle to ensure the all-round development of students in the field of intelligent unmanned equipment and the improvement of practical ability, focusing on the implementation of basic, applied, innovative and comprehensive ability improvement, and then improving the equipment combat capability of the armed police force.

Basic: basic knowledge, basic ability and basic literacy assessment. Assess the students ' mastery of the relevant theories of intelligent unmanned equipment, including robot technology, artificial intelligence, sensor technology, control system and other aspects of knowledge; assess students ' basic political literacy and so on. Application: theory with practice ability and practical ability assessment. To assess trainees ' skills in the design, development and operation of intelligent unmanned equipment through actual projects or laboratory practices, including project reports, experimental reports, product design, etc. Innovation: Evaluate the innovation ability of students in the field of intelligent unmanned equipment, including the improvement of existing technology, the application of new technology, the ability to solve practical problems, etc. Comprehensiveness: Considering the above contents, the comprehensive ability of the students is evaluated to determine their level and ability in the innovation of intelligent unmanned equipment. Comprehensively use the knowledge, thinking methods, multi-angle observation and thinking, find out the ability to analyze and solve problems, and assess whether the students can actually solve the problems faced by the development of intelligent unmanned equipment in the army, and whether they can adapt to the post ability of the army.

In the specific evaluation process, ' diversified ' evaluation subjects such as student self-evaluation, group mutual evaluation, teacher evaluation, and hospital leadership evaluation are introduced. Through multi-dimensional evaluation contents such as theoretical examination evaluation, oral interview evaluation, on-site operation or skill competition evaluation, course paper evaluation, participation activity record and award-winning situation, report work display evaluation, and practical work effect evaluation, students can view test scores, paper scores, practical operation scores, and students' ideological and moral evaluation forms through the educational administration system and team cadres. The specific assessment weight is shown in Table 1.

According to the comprehensive assessment and evaluation system of students in Table 1, the assessment of students is divided into five steps, namely: bold thinking, hands-on, hands-on, for combat and comprehensive evaluation. Among them, bold thinking mainly evaluates students ' creative thinking ability, hands-on assessment of students' innovative practical ability, hands-on assessment of students ' equipment practical ability, for combat simulation recommendation ability as the assessment index, and finally comprehensive evaluation through graduation thesis assessment to achieve the goal.

Table 1. Evaluation index

First grade indexes	Specific indictors	Performance	score
Basic （25%）	course score 60%	According to the score table of each subject	
	ideological evaluation 40%	According to the instructor 's ideological evaluation table	
Practicability （25%）	Number of participation activities 15%	According to the activity record	
	Winning awards 30%	The scores of national, provincial, municipal and university levels were 50,25,15,8, respectively.	
	Hands-on performance 30%	According to the actual performance table	
	Thesis scores 25%	According to the course thesis scores	
Creativity （25%）	Innovation competition （100%）	The scores of national, provincial, municipal and university levels were 50,25,15,8, respectively.	
synthesis （25%）	Graduation thesis （100%）	According to the results of graduation thesis	
Total score			

3 Innovative Thinking Assessment

The innovative thinking ability assessment of intelligent unmanned equipment innovation students is mainly to expand students ' thinking, so that they can think boldly, not rigidly adhere to the existing basic theoretical knowledge, mainly evaluate the students' ability to propose innovative solutions to problems, including innovative thinking and design of technology, engineering, design and other aspects. Assess students ' interdisciplinary comprehensive application ability, such as integrating mechanical engineering, electronic engineering, and computer science to propose innovative solutions or designs. The assessment contents include: (1) Intelligent patrol robot project design, and finally presents the design scheme. (2) Course papers, for example, in the course of military system modeling and simulation technology, students are required to write an innovative research paper on the field of intelligent unmanned equipment, and show their innovative thinking ability in the defense.

4 Innovation Practice Assessment

The innovative practice assessment of intelligent unmanned equipment innovation students aims to evaluate the students ' ability to use innovative thinking and skills to solve problems in practical applications. The main assessment is the experimental process assessment, focusing on the ability of the students to apply the knowledge and skills to the actual project [3]. The main assessment contents are: to participate in innovation

practice competition, such as participating in mechanical innovation design competition, five small innovation activities, etc.

5 Equipment Practical Operation Assessment

Table 2. Evaluation method of UAV practical operation

The assembly debugging scoring standard			
item	**marking criterion**	**Points**	**obtaining points**
housing assembly	The machine arm scored 4 points, the scaffold scored 2 points, the battery compartment scored 1 point, the frame structure was solid scored 1 point, the motor seat position angle deviation scored 4 points, the shock absorber scored 2 points.	14	
Power system assembly	The motor scored 4 points, the electric adjustment scored 4 points, the link connection scored 4 points, and the blade scored 2 points.	14	
Remote control debugging	Correct frequency got 2 points	2	
troubleshooting	After assembling, the examiner uniformly sets up a fault, and the participating team sends a contestant to troubleshoot the fault and score 4 points (limited to 1 minute)	4	
Flight test situation	Take-off offset is less than 30CM height 1 meter get 2 points forward, left translation, backward, right translation, landing each get 1 point (for rectangular 1 meter flight route offset is less than 30CM score)	6	
total score	Countdown within 40 minutes to complete the score, the remaining time to complete the record ahead of time, for the same score ranking	40	
Racing flight scoring criteria			
item	**Mmarking criterion**	**Points**	**obtaining points**
jump-off	Offset small 30cm get 2 points. Height stability and offset accounted for 2 points each.	8	
Hovering on four sides	Height and hover time each accounted for 2 points, height and hover offset less than 30 cm full marks	8	
Obstacle-surmounting skills	Crossing the flag and arch barriers each scored 0.5 points, crossing the ring and the tunnel each scored 1 point, according to the direction of the head through the circle did not score. Out of the track a deduction of 0.5 points	22	
Finish flight time	Countdown 5 minutes to complete the score ahead of time to complete the record every remaining 1 second plus 0.05 points, the remaining 180 seconds plus a maximum of 9 points.	13	
landing	Only the fuselage, regardless of the blade, the scaffold shall not exceed the take-off and landing platform. Perfect landing scored 5 points, excellent landing scored 4 points, and qualified landing scored 3 points. Ineligible landing does not score	9	
total score		60	

The equipment practical operation assessment of intelligent unmanned equipment innovation students aims to evaluate their ability to apply the knowledge and skills they

have learned in practical operation, as well as their actual skill level in using intelligent unmanned equipment. It mainly evaluates the proficiency of students in the operation of intelligent unmanned equipment, including the skills of equipment assembly, debugging and operation. Test the students ' ability to use the knowledge they have learned to solve problems in the actual scene, including the ability to respond to emergencies and troubleshooting. The safety awareness and standard operation ability of the trainees in the operation of the equipment are assessed to ensure the safety and stability in the operation process. Table 2 is the evaluation method of UAV practical operation, which is divided into assembly debugging and racing flight.

6 Simulation Deduction Assessment

The simulation deduction assessment of intelligent unmanned equipment innovation majors aims to evaluate their ability to use the knowledge and skills they have learned to simulate and solve problems in a virtual environment. Including: (1) Evaluation of simulation capabilities: Assess the ability of trainees to model, simulate and deduce in a virtual environment, including the ability to simulate equipment behavior and performance. (2) Test the problem solving ability: test the students ' ability to use the knowledge they have learned to solve practical problems in the virtual scene, including the ability to cope with various scenarios and challenges. (3) Decision-making consciousness: The decision-making consciousness and decision-making ability of the students in the process of simulation deduction, including the decision-making ability in the face of uncertainty and risk. The assessment content includes: simulation modeling tasks and scene models and deductions. Taking into account the heterogeneity of learning quality between different learning groups and members of the same group, qualitative evaluation and quantitative evaluation are integrated on the basis of scientific and objective [4-6].

7 Assessment of Innovative Papers

The purpose of the examination of innovative papers for the students majoring in intelligent unmanned equipment innovation is mainly to evaluate the students ' mastery of the basic theory, key technology and application practice in the field of intelligent unmanned equipment, as well as their innovative thinking, research ability and paper writing ability. Through the writing and assessment of innovative papers, students ' ability to think independently, study in depth and solve practical problems can be cultivated, and their innovative consciousness and comprehensive quality can be improved [7].

8 Conclusion

This paper constructs a diversified assessment and evaluation method centered on the learning process of students. Through the five-step assessment process, the students ' practical basic, applied, innovative and comprehensive ability assessment is realized,

and the students ' thinking ability, hands-on operation ability and ability to solve specific problems are improved.

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