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Construction of Network Security enforcement Virtual Simulation Experiment and Teaching Platform

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Abstract: ***In view of the issues in virtual simulation experiment teaching of network security enforcement, this paper analyzes the need of construction of the virtual simulation experiment teaching platform, that expounds the construction content of virtual simulation experiment platform from 3 aspects of virtual simulation course system, experimental area and teaching mode. Network security enforcement virtual simulation experiment and teaching platform is made with 3 core experimental modules of network security scene enforcement, electronic data scene forensics, and investigation of cyber-crime cases. The coaching of students' higher order thinking and actual combat ability is reinforced publically security schools.***
Keywords: Virtual simulation, Experimental teaching platform, Network security law enforcement.

I. INTRODUCTION

Virtual simulation experiment teaching is Associate in Nursing important content of upper education info construction and experimental teaching demonstration center construction, and is that the product of the deep integration of discipline and data technology [1]. At present, ancient crimes in China square measure step by step shifting to the web, and cyber crimes square measure oftentimes and frequently occurring, seriously endangering national security, social order and people's interests. The formation of a team of high-quality professionals in network security and enforcement is that the inevitable path to effectively restrain on network crimes and understand the comprehensive governance of network crimes, and also provides a brand new examination question for the teaching of network security enforcement [2-3]. In view of the network security enforcement routine observe teaching cannot cowl all sorts of the experiment, particularly some reach or irreversible operations (such as electronic knowledge on-site review, etc.), and wish high value, massive comprehensive experiments coaching (such as a range of sorts concerned network crimes inquiring experiment, etc.), virtual simulation experiment teaching has become a necessary technique within the teaching of network security enforcement [4-5]. Therefore, combining with the characteristics of network security enforcement major, exploring the institution of virtual simulation experimental teaching platform for network security enforcement plays an important role within the teaching of network security enforcement experiment and sensible training[6-7].

II. THE NECESSITY OF CONSTRUCTING VIRTUAL SIMULATION EXPERIMENTAL TEACHING PLATFORM FOR NETWORK SECURITY LAW ENFORCEMENT

One is to unravel the matter of poor learning experience. Virtual simulation experimental teaching platform uses VR technology to form virtual simulation law enforcement and case handling scenes, and transfers real case information to the simulation atmosphere to boost the immersion and participation of experimental operation. Second, solve the matter of your time and area limitation. The virtual simulation experimental teaching platform will extend the time of students' experimental operation and learning, solve the issues like the long time of disk biological research experiment and therefore the issue in
setting up the on-the-scene scrutiny atmosphere, and let students get eliminate the restrictions of physical area and teaching time within the laboratory. Third, solve the matter of the process of cyber security law enforcement. The volatilities of electronic proof mean that the method of cyber security enforcement faces irreversible risks. Moreover, there square measure complicated, skilled and unexpected issues within the method of network security enforcement, that square measure troublesome to be recurrent within the real atmosphere. The virtual simulation experimental teaching platform will guarantee the integrity and credibility of knowledge on the premise of security, stability and reliableness.

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III. CONTENT OF CONSTRUCTION OF VIRTUAL SIMULATION EXPERIMENTAL TEACHING PLATFORM FOR NETWORK SECURITY LAW ENFORCEMENT

Under the background of security education informatization, so as to combat ability coaching because the guide, combining with the net technology and VR technology, the network security and enforcement and the depth of knowledge technology integration of disciplines, build "for actual combat, reality, to effect" of the programme system, building of three-dimensional, open and multi-level experiment house, build the "three step progressive, four modernizations fusion, three provinces gauge" mode of teaching, to enhance public security universities and faculties students of upper order thinking and innovation ability, advance the informatization construction of police faculties teaching and experimental teaching reform and development [8].

A. Construct a Course System that is "oriented to actual combat, close to reality and practical effect"

The cyber security enforcement syllabus system ought to closely follow the commanding style of professional talent educational program, perpetually be sensible and result-oriented, give details the advanced training objectives, and highlight the connexion of target courses. specializing in the coaching of the 3 major capabilities of network security enforcement, the modular reconstruction of the experimental teaching items and contents was allotted, and 3 modules of network security field enforcement, electronic information field investigation, and network connected case investigation and deduction were made. Among them, the network security on-the-scene enforcement experiment could be a demonstration experiment, that focuses on coaching students to master the network security onsite enforcement method consistently. The electronic information scene investigation experiment could be a comprehensive experiment, that is that the key purpose of the network security enforcement experiment course. The main content is that the normal method of the electronic data scene investigation, and pays attention to the cultivation of students' awareness of electronic proof preservation and technical ability of proof assortment. The illation experiment of internet-related cases investigation associated handling is an innovative experiment, with the most content of typical internet-related case investigation and handling concepts and strategies, and focuses on cultivating students' innovative ability of investigating and assembling proof in internet-related cases. Among them, the experimental level, from elementary to intermediate, from intermediate to advanced; In terms of experiment sorts, from demonstration experiment to comprehensive experiment, and then to innovative experiment, the hierarchic progressive experiment model of tiny category was explored. In terms of experimental materials, it derives from actual combat and serves actual combat. It quotes

the most vivid actual combat cases from the front of the police, works with the resident instructors to create associate experimental teaching team, advocates inquiry-based, heuristic and discuss-style sensible teaching, and promotes the extension of experimental and sensible training to the front of actual combat of the police.

B. Build a "three-dimensional, open and multi-level" Experimental Space

After the occurrence of COVID-19, the Ministry of Education suggests the work demand of "no suspension of classes", and nationwide faculties carried out large-scale and arranged on-line education and teaching throughout the epidemic interference and management period, that is of nice significance to the promotion of education and teaching reform by mistreatment data means. Meanwhile, higher necessities square measure suggests for the rationalisation and practicality of the web experimental platform. In line with the resource sharing, "teaching, learning, practice," the look conception of integration, virtual simulation experiment teaching platform on network security social control|enforcement} has carried on the structure improvement, improve the amount of standard and unconventional, "everyone will learn, to find out all the time, all over will learn" learning area construction, building of threedimensional, open and multi-level experiment area [9]. Three-dimensional refers to the teaching content, based on the network security and enforcement major teaching experiment define framework, so the fundamental theory of experimental training; In terms of teaching methods, on-line and offline teaching ought to be integrated to fully embody the principle of "combination of virtual and real" to hold out heterogeneous simulation teaching experimental comes. Openness is receptive students and teachers 24/7. It not solely provides students with time and space for cyber security enforcement coaching, so that students will still deepen and improve in their spare time, however additionally builds a platform for lecturers to grow in research project, so research project feeds back teaching. Multi-level is education of record of formal schooling and go hand in hand, police coaching teaching experiment platform supported network security law enforcement, enforcement will do network security skills contest, to observe promotion, whereas, in order to hurry up network security theory information and practice fusion, inspire the motivation for college kids majoring in network security and enforcement, improve the students' active learning and increasing the ability to suppose. At constant time, police coaching ought to be administered around hot topics, and skilled coaching should be optimized together with the operating situation of security and latest technologies, thus on enhance the theoretical, targeted and sensible aspects of police coaching.

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C. Build a Teaching Model of "Three-step Progression, Four Modernizations and Three Provincial Gauges"

The three-step gradualism refers to the institution of a stepwise class-conscious system, with the first stage orientated to noesis, the intermediate stage orientated to specialty, and therefore the advanced stage oriented to sensible follow. within the primary stage, general education are going to be allotted for undergraduates who don't seem to be majoring in cybersecurity and law enforcement, and immersive game expertise mode can be adopted to master the quality awareness of electronic forensics. within the intermediate stage, we'll perform professional core education for undergraduates majoring in cybersecurity and enforcement, using case analysis and experimental simulation mode, and focusing on mastering the on-site scrutiny method and electronic knowledge analysis technology. The senior stage focuses on cultivating the sensible ability of network security enforcement for all students and trainees. The integration of the four modernizations refers to the organic integration of interaction and participation, practical cases, immersive experiments and ideologic and political courses, and therefore the construction of a highquality experimental room education system. Interactive participation suggests that to stick to the studentcentered, use huge knowledge to hold out learning state of affairs analysis, teach students in accordance with their power, implement precise methods, style democratic teaching methods and strategies in line with a spread of learning designs, and perform all-around, effective and deep interaction. Case follow implies that on the idea of the good mechanism of "school-bureau cooperation and school-enterprise cooperation", the "teaching-practical community" is conjointly designed, and therefore the investigation activities of security business square measure deeply carried out, and therefore the classic cases and typical issues of law enforcement within the field of network security square measure collected, so on accumulate first-hand case materials for teaching and research project work [10]. Experimental immersion is predicated on the network security law enforcement actual combat teaching platform, the introduction of VR computer game technology, highlighting the immersive experimental expertise, so students will actually understand the electronic scrutiny site, so as to pass the take a look at, question and answer and immersive expertise, learning electronic knowledge extraction and fixed technology and norms, stimulate students' interest in learning; The ideologic and political orientation of info suggests that to hold out the construction of skilled ideologic and political education deeply, to integrate the academic resources of condensed skilled courses, to hold out ideological and political education wordlessly and to improve the academic result. The 3 provincial gauges mean that the experimental results and final results are not any longer take as the single assessment basis, however pay additional attention to the process assessment, improve the formative assessment, and build a comparatively honest and cheap diversified course analysis system and elaborated gauges. Through on-line time, communication and interaction, platform log, intelligent analysis and different ways in which to evaluate the method, result and result feedback of the three aspects of comprehensive analysis.

IV. CONSTRUCTION OF VIRTUAL SIMULATION EXPERIMENTAL TEACHING PLATFORM FOR NETWORK SECURITY LAW ENFORCEMENT

The virtual simulation experimental teaching platform for network security enforcement is composed of network security field enforcement experiment module, electronic information field investigation experiment module, and network-related case investigation and deduction experiment module. The platform focuses on the development of experimental projects and organically combines demonstrative, comprehensive and innovative teaching experiments according to the experimental data structure, students' learning characteristics and talent cultivation programs. Adhere to the "trinity" education thought of value steering, data impart and talent cultivation, expand the breadth and depth of experimental teaching content, and strengthen the necessary role of skilled education in cultivating loyal, reliable, intelligent and courageous high-quality police personnel [11]. With the construction of "integration of teaching, apply and war" because the cornerstone of the experimental teaching
platform, it carries out sensible teaching reform of experimental and sensible coaching comes, creates a database of high-quality experimental and sensible training comes, strengthens the cultivation of students' cybersecurity values, and serves the final word coaching goal of "cybersecurity enforcement talents".

A. Network Security Field Law Enforcement Experiment Module

The main content of the network security on-the-scene law enforcement module is to simulate network security protection and management of web site management for law enforcement objects like network house owners, managers and network service suppliers in step with the relevant laws and rules like the Network Security Law and Information Security Levels Protection and Management Measures. The network security on-the-scene law enforcement module will simulate management, inspection, enforcement and alternative work links in virtual scenes to hold out actual combat simulation training.

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The most business situations embrace on-the-scene law enforcement business situations for net access, Internet knowledge center, content distribution, and domain name service units; For the scene enforcement business situations of units providing net information services; For providing public net service units of the scene enforcement business scenarios. The contents of enforcement embrace network security management system, network security operating procedures and network security level protection.

B. Electronic Data Field Investigation Experiment Module

The electronic information scene investigation experiment module is that the core module of virtual simulation experiment teaching platform of network security law enforcement. In accordance with relevant laws and regulations, like the laws on the gathering, Extraction, Examination and Judgment of Electronic Data in Handling Criminal Cases and also the laws on the Handling of Electronic information proof in Criminal Cases by peace Organs of the Ministry of Public Security (2019), there ar strict pointers for the investigation of electronic information at the scene of on-line cases. the electronic information on-the-spot experiment module for cases involving network for the technology of electronic data decomposition, as well as the exploration of preparation, on-the-spot security, the scene photos, electronic data search, laptop information extraction mounted, mobile phone information extraction, extraction and glued wireless network, fill within the field exploration instrument, electronic equipment storage and comprehensive field exploration information and different method components [12]. The electronic information scene exploration experiment module relies on virtual simulation interactive animation, supplemented by superposition of video, voice, text and film, to simulate the case scene and also the standard method of electronic forensics. users can interact with individuals or objects within the scene step by step according to the prompts. The system will showing intelligence identify user operations and guide users to trigger the case handling method step by step in line with the operating standards and quality, therefore on complete the inspection experiment of the full method of network security enforcement. The virtual simulation interactive operation totally mobilizes students' hands and brains, cultivates students' mentation ability of onsite investigation, and consolidates students' mastery of electronic forensics data.

C. Internet-related Case Investigation and Deduction Experiment Module

The network connected case investigation and deduction experiment module is a vital module of virtual simulation experiment teaching platform of network security enforcement. Facing the new scenario and new varieties of cyber-related crimes, students majoring in cybersecurity enforcement should perceive and be familiar with the investigation and handling method of cyber-related crimes. Cases involving network illation carried experiment module supported every kind of typical cases involving network crime case documents (files) materials, custom development involving network case for case simulation coaching system, are known as, police and currently will be, visits, case analysis, technical appraisal, summoned, interrogation, capture and a series of cases probing method digital process and handling of standardization method of the teaching style and display, in scene simulation, the interactive teaching, case analysis, skilled review for cases involving network deal with standardized business skills of network experimental teaching coaching [13]. The model of illation experiment of internet-related case investigation adopts the trail of case style style inference coaching coaching marking feedback to hold out inference experiment of internet-related case investigation. Case style refers to the script style around the network gambling, network fraud, network pornography, network felony, bootleg laptop intrusion and different 5 classes of cases. Deductive coaching refers to the utilization of text and footage mixed, audio and video motor-assisted visual show of the case events, guide students to simulate the exercise on the pc alone, students step by step answer in accordance with the steps of deduction and simulate the handling of the case. The grading feedback refers to the intelligent analysis system supported the students' individual answers and therefore the case investigation method.

V. CONCLUSION

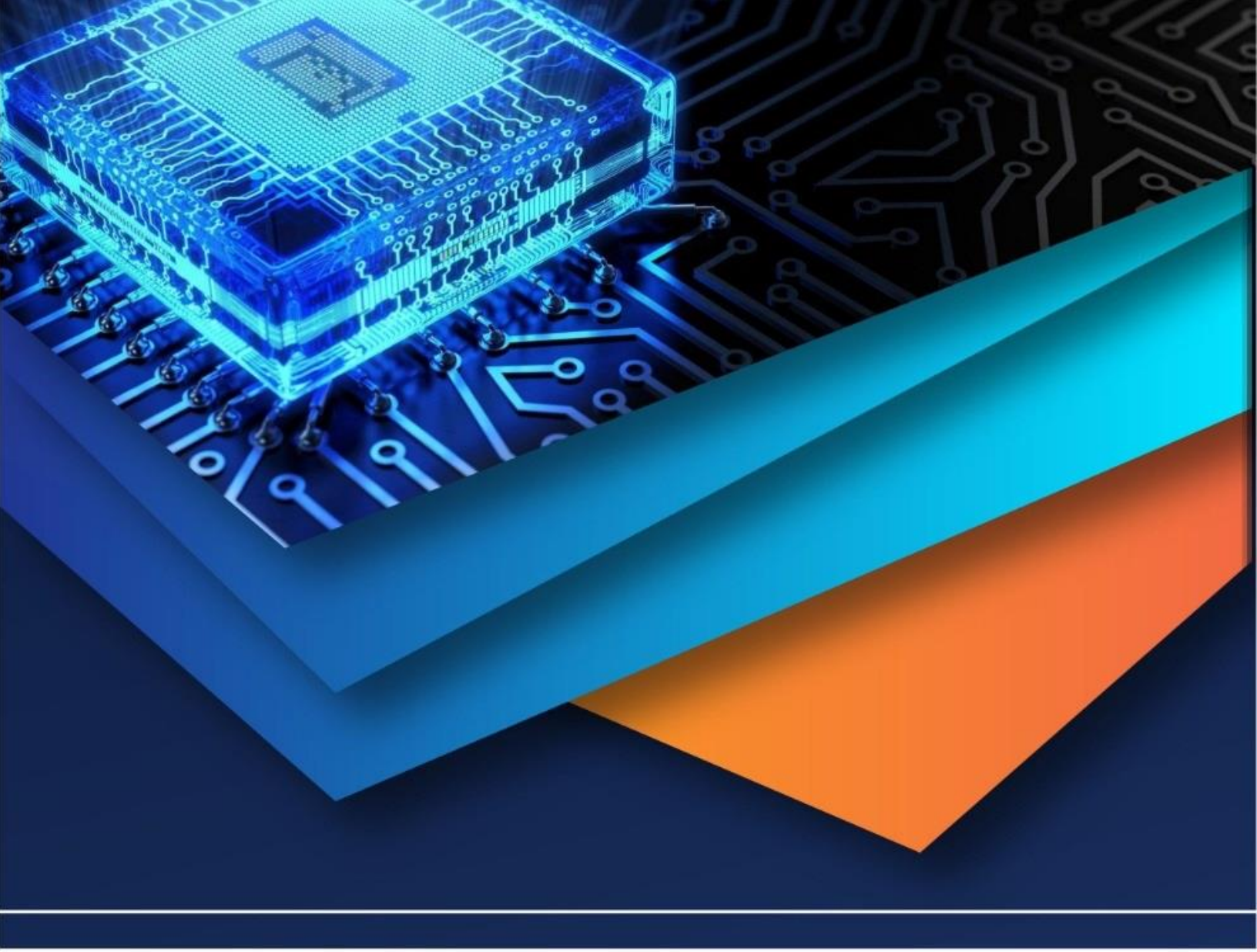
Through the combination of knowledge technology, intelligent technology and peace education, we insist on the combination of within and outdoors college, inside and outdoors category, consistently integrate virtual simulation experimental teaching resources, and build a batch of mixed "golden classes" that "combine reality with reality and complement every other". supported the cooperation mechanism between the college and also the bureau, combining with the characteristics of the network security enforcement skilled course chain, we will build a virtual simulation experimental teaching team of "police and education integration and cooperative education". In accordance with the principle of mixing services with resources, the virtual simulation experiment teaching platform of network security enforcement is constructed, and also the actual combat teaching reform is deeply promoted. With the goal of cultivating high-quality police personnel of network security enforcement, the high-level thinking and actual enforcement ability of scholars are perpetually improved.

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