

Modern educational technologies in teaching photography in China

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Nowadays modern educational technologies are profoundly transforming photography teaching in China. This article focuses on exploring the application of cutting-edge technologies such as artificial intelligence, virtual reality, and drone aerial photography in teaching. It analyzes the advantages they bring to education, such as improving teaching efficiency and enhancing students' practical skills. At the same time, the article considers the challenges arising in the teaching process.

Keywords: educational technology, teaching photography, artificial intelligence, virtual reality, drone aerial photography.

В настоящее время современные образовательные технологии трансформируют обучение фотографии в Китае. Данная статья посвящена изучению применения на практике таких передовых технологий, как искусственный интеллект, виртуальная реальность и аэрофотосъемка. В работе анализируются преимущества использования современных технологий, которые включают повышение эффективности обучения и улучшение практических навыков студентов. Кроме того, рассматриваются проблемы, связанные с использованием инноваций.

Ключевые слова: образовательные технологии, обучение фотографии, искусственный интеллект, виртуальная реальность, аэрофотосъемка.

Introduction. Photography as a separate form of art was invented in the 1840s. The main idea of photography was to capture the real life that reflected the main difference between photography and painting [1]. Nowadays photography is becoming one of the most popular forms of art which includes various genres, such as portrait, landscape, architecture, interior, reportage, as well as wedding, fashion and advertising photography [1].

The popularity of photography has led to the improvements in the system of professional photographer education. In particular, in Belarus, the profession of a photographer can be obtained in a number of educational institutions such as Minsk State Technological College, Gomel State Vocational and Technical College of Folk Arts and Crafts, Vitebsk State Technological College, etc. A similar situation is observed in China, where photography industry is booming, and photography education is constantly innovating. According to the «China Education Statistical Yearbook 2024», the number of colleges and universities in China offering photography and related majors has grown from 127 in 2015 to 286 in 2024, with a compound annual growth rate of 9,2 % [2].

Professional photography educators increasingly leverage modern technologies to provide students with efficient and creative learning experiences. These technologies not only reshape traditional teaching methods but also expand students' creative horizons, cultivating photography talents that meet contemporary industry needs. Thus, this article aims to examine the primary modern educational technologies used in training professional photographers in China. Its scientific novelty and practical significance lie in the scarcity of systematic research on photography pedagogy, as well as the potential value of introducing China's technological approaches to Belarusian educators seeking to enhance their teaching practices.

Main body. One of the revolutionary technologies in many areas of life, including photography, has become the use of artificial intelligence which is deeply integrated into the process of teaching in China. First of all, one of the most useful features in modern cameras is built-in artificial intelligence, which not only helps to improve the quality of the photo, but also facilitates the editing process. Features such as automatic recognition of faces, scenes, and even photo styles have already become part of the daily practice of many professionals and amateurs [3]. In addition, artificial intelligence improves the quality of images by removing noise and increasing the sharpness of perception. It also automatically adjusts the color balance and brightness of photos, removes unwanted defects such as dust and scratches.

Artificial intelligence mostly helps in photo processing, providing the ability to improve the quality and automatically optimize images. The role of artificial intelligence in photo processing is especially invaluable since it speeds up the process and improves the results, making them more realistic and attractive. First of all, through image recognition and deep learning algorithms, the intelligent system can analyze students' works quickly and accurately. Secondly, the technology can also identify the positional relationship between various objects in the picture, determine whether the composition method is reasonable, and give specific suggestions. Finally, in terms of color, it can analyze the coordination of color combinations and provide optimization directions for parameters such as hue and saturation.

As for photography training, N. Odever points out that artificial intelligence enables students to obtain a large amount of feedback on the technical aspects of their works in a short period of time, accelerates the learning process, and at the same time reduces the burden on teachers in basic evaluation work [4]. Further, artificial intelligence tools provide students with abundant inspiration and technical support in the early stage of photography creation. After students input their creative themes and expected styles, the system can automatically generate composition plans, recommend appropriate combinations of shooting procedures, and even simulate the shooting effects under different parameter settings.

In general, based on the continuous analysis of students' learning data, artificial intelligence can formulate personalized learning paths for each student. As an example, for students who are bad at the application of light and shadow, more relevant learning materials may be pushed, special practice tasks are to be assigned, and the learning progress is tracked in real time. Whereas the teaching plan is dynamically adjusted according to student's skills, this ensures that individual learning outcomes will be achieved at an individual pace [4].

The following main areas are distinguished in teaching photography:

1. the theory: basics of composition and lighting, genres of photography, etc.;
2. mastering practical skills: working with a camera and lighting equipment, shooting in various conditions, etc.;
3. developing creative vision of a master;
4. processing photographs [5].

Accordingly, teachers should pay special attention to teaching students how to process photographs. The functions of digital post-processing software represented by Adobe Photoshop and Lightroom continue to expand, and their application in teaching photography is also more in-depth. Photoshop teaching is no longer limited to basic layer, selection, and color adjustment operations, but also involves more complex intelligent object applications, 3D element integration, and advanced image compositing techniques. For instance, in the production of creative photography works, students learn to blend materials from multiple different scenes through meticulous matting and fusion techniques which aims at creating surreal and fantastical images. Lightroom, another photo management technology, has further enhanced its intelligent color adjustment functions and students can use them to quickly create different styles, such as retro, Japanese fresh style, and European and American fashion style.

Profound teaching experiences can be gained from using virtual reality and augmented reality technologies [6]. In some universities and photography training institutions in China, students can put on virtual reality devices and immerse themselves in various virtual shooting scenes, such as the streets and alleys of bustling cities, mysterious and profound tropical rainforests, and ancient castles with a long history. In these virtual scenes, students can freely adjust the shooting angle, change the lighting conditions, simulate the real filming process and observe the shooting effects in the real time. This helps students deeply understand the composition and lighting application techniques of different scenarios in safe and convenient environments, avoiding the difficulty of finding specific shooting scenes in reality. Such methods greatly enhance learning interest and enthusiasm and allow students to quickly accumulate experience and put it into practice.

Augmented reality technology is mainly used in photography teaching for image recognition, information display and shooting assistance. Students can scan their shots through the augmented reality application on their mobile phones or tablets to obtain detailed information about their works, including the creative background, the photographer's ideas, and the technical methods used, which enriches their professional understanding.

In actual shooting, augmented reality technology can superimpose virtual photography elements on real scenes. For example, when shooting landscapes, reference lines of different composition methods are displayed on the screen to help students quickly find the best composition. When shooting portraits, it may indicate the best pose and expression range for a subject that assists students in creating more outstanding works, making the learning process more intuitive and efficient.

Currently photography is shifting its focus from static images to dynamic video shooting. Accordingly, drones or unmanned aerial vehicle are often used to create video content. Unmanned aerial vehicle technology has opened up a brand-new perspective for photography teaching and broken through the limitations of traditional photography in terms of shooting position and height. By operating drones, students can overlook the objects they are shooting from the air, presenting grand scenes and unique spatial arrangements. In photography courses such as urban landscapes and ecological environments, drone aerial photography plays a significant role, helping students to obtain comprehensive and macroscopic image data, providing strong support for related research and creation, broadening the creative thinking in photography field, and making students' works more innovative and unique.

When teaching, professional photographers first introduce the structure, flight principle and operation norms of drones including takeoff and landing procedures, control skills during flight, and safety knowledge [6]. In terms of camera parameter settings, students practise how to reasonably adjust the resolution, frame rate and exposure mode in order to obtain high-quality aerial photography images. As for flight skills, methods for choosing the appropriate flight altitude, angle and route are taught. For instance, high-altitude panoramic flight may be adopted when shooting vast landscapes, whereas circling flight and low-angle crossing flight are used when presenting architectural details.

Modern educational technologies are currently being updated and replaced extremely rapidly, and new photography equipment, software and technologies keep emerging. This requires teachers who educate professional photographers to keep up with the cutting-edge technologies. However, teachers have heavy daily teaching tasks, limited time and energy, and it is difficult for them to master new technologies. In this regard, educational institutions should develop close cooperation with technology enterprises and provide teachers with regular technical training, trial use of new products, and other support. On the other hand, teachers should make use of online learning platforms, professional forums and other resources in order to independently learn the latest technical knowledge, participate in industry seminars to exchange experiences with peers, continuously improve their own technical levels, and ensure that the teaching content keeps pace with the current educational methods.

Another challenge for teachers is considered to be setting reasonable limits on the use of modern technologies in education [7]. Some students may overly rely on modern technologies such as artificial intelligence to generate ideas and use post-production software for exaggerated embellishment. They may neglect developing basic photography skills and the exploration of their own creativity, which results in works lacking individuality and depth.

To solve the problem of excessive use of modern technologies, teachers should emphasize that technologies reveal additional tools which assist creation. Educators should focus on cultivating students' observational ability, aesthetic flair and innovative thinking. In terms of curriculum design, special content such as the history of photography and art theory should be added in order to enable students to draw inspiration from classic works and understand the essence of photography art. To develop students' skills, teachers should guide them to organize their creative concepts through observation and thinking and use technical means for realizing their intentions. Thus, reasonable application of modern technologies enables students to master their technical skills as well as maintain independent thinking and creativity in photography art, and achieve the organic integration of technology and art.

Conclusion. Nowadays the application of modern technologies leads to significant changes in photography education. Technologies such as artificial intelligence, virtual reality, drone aerial photography, and digital post-processing have enhanced teaching effectiveness from multiple dimensions and strengthened students' practical abilities and innovative thinking. Despite the challenges such as rapid technical updates and students' overreliance on technologies, educators should use the most efficient methods in teaching. Although such developments may require joint efforts of teachers, students and institutions, educational process will definitely result in improvements and students' achievements.

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