

Exploration of Innovative Teaching Models for Photography Courses Based on Artificial Intelligence Technology

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Abstract. With the rapid development of AI, it has triggered profound changes in the education field. The conventional teaching contents, methods, means, and evaluation systems being used in photography teaching are gradually failing to meet the requirements of the new era. The study will focus on artificial intelligence technology influencing to what depths in photographeducation. It is an assessment with the challenges and possibilities that are coming out in terms of learning goals, activities, environments, materials, and results evaluations, all of them seen from the "Diamond Model." We believe that the AI is acting as the main driver of change in the teaching of photography courses. Introducing new ideas about "cultivating people" based on actual needs and including the re-arrangement of "Photography +". This paper focuses on the research of AI powered advanced photography learning objectives framework, intelligent photography teaching system based on smart learning paths, virtual-real combined intelligent simulation teaching system for photography, knowledge distillation system for photography, and the establishment of photography teaching systems with multiple modalities; The idea is to bring out new concepts about how we should be heading into the future when it comes to photography education.

Keywords: Artificial Intelligence Technology, Photography, Teaching Reform, Innovative Teaching Models, Intelligent Learning

1. Introduction

The appearance of the artificial intelligence(AI) era is a combination of digital and intelligent technology. As the legendary Dutch CS great Eds. Dijkstra has once said, "The instruments we use have a profound impact on the kind of thoughts we think and thus on our way of thinking. This influences our mental habits" [1]. The wide application of digital technologies such as big data, cloud computing, artificial intelligence, and Internet of things have made it impossible to imagine life without these technologies in both learning and working environments. By means of these technologies, it has been greatly improved both in terms of how we process and understand information. And, it also exerts an influence on people's ways of life, jobs and ways of thinking.

AI tech has had profound impacts on photo educ, it's observable across many dimensions of educ, instrctn methods, learn frameworks, ed admin, and evaluat mech. The traditional photography education is just theory teaching and the technical skills, which can't meet the need of creativity and problem solving in the fast-moving society. We are sure that education on photography needs to

proactively involve and adapt to huge era changes, blending basic photographic knowledge with modern technology. It means guiding students to obtain, accept and benefit from new technology, so that a new type of photography talent can grow, a type that is innovative and futuristic.

2. The impact of artificial intelligence technology on photography education

2.1. Conflicts and transformations in learning concepts driven by AI

AI-tech greatly influences education. As for the fast development of new technologies, such as big - model technologies, the progress of blended teaching modes combining online, offline and virtual simulation is also very fast. It is a great challenge to conventional teaching. In 2022, Dr. Zhang Xiaojun, from Xi'an Jiaotong-Liverpool University, presented his "Diamond Framework on education reform" as shown in Figure 1: This model is centered on three aspects—objectives, evaluations, and methods—and spans five areas—educational objectives, teaching activities, teaching environment, courses, and evaluation of learning outcomes. Instructional Innovation is vast and complete [2].

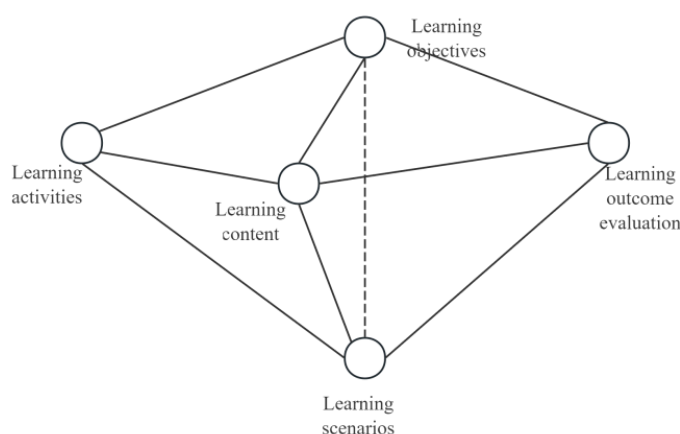


Figure 1. Diamond Framework on education reform

The impact of AI technology on teaching innovation is widespread in every part of the Diamond Model. It affects especially the learning scenario, the learning activity and the learning content. The development of AI powered education tech greatly accelerates the pace and breadth of improvement in teaching. the focus of teaching is moving from teacher to student, learning scenarios from a single classroom to blended learning, learning contents from a text book to a vast resource of intelligence digital resources, learning activities from passive reception to personalized learning [3].

2.2. Paradigm revolution in education in the AI era

In the era of artificial intelligence, it is the fundamental transition to "human development" in education, moving away from focusing on just the accumulation of knowledge but instead valuing students' development and the future-oriented core competencies. This kind of basic change needs us to have a teaching method that concentrates on useful application, putting real-world usage as the core of the learning process. A transformation that is greatly supported by AI technology, which can simulate all sorts of situations, give you instant feedback, and let you do all sorts of personal projects to apply them. This is all the more true with skill – oriented fields such as photography. At

the same time, it contributes to "photography+" by providing a support for the reconstruction of existing learning material through synthesis of diverse knowledge. This improves quality as a whole, has the ability to deal with more difficult issues, and has a mindset that favors new ideas, AI acting as a robust driving force in discovering connections between different disciplines [4].

2.3. The imperative of social ethics and copyright awareness education in the AI epoch

As Artificial Intelligence profoundly changes the educational scene, at the same time, the cultivation of social ethics and copyright consciousness is becoming an undeniable fact. In terms of the first wave of transformative AI, it may bring out personalized learning experience but it also comes with ethical issues as well as intellectual property dilemma. When these things change, it means schools have to look at their own purposes and priorities.

And the appearance of AI-driven educational technologies cause people to argue that whether they're fair and just. Bias in a system like this, as in algorithms as well has the capacity to increase differences in educational outcome, which will necessitate learners to recognize the inequities that are created through an ethical lens. Next to fairness, the need for accountability in the education system now drenched in AI became ever so urgent: When artificial intelligence systems decide how we go to college or spread bad information, it's not clear who should be blamed. So, we need strong ethical structures and places to point fingers at. Education needs to create ethical handling of AI tools. Additionally, this fast developing territory of AI made material has a new take on copyright awareness and intellectual property. The usual idea about who the author is is made into question by AI systems which make very real-seeming stuff. As both a consumer and a creator, students should learn about digital rights, know what plagiarism means in an AI world, and think about the right things to do when they use, give credit to, and share stuff that comes from AI. This updated comprehending contains imaginative authenticity and responsible digital citizenship.

In sum, incorporating AI into the educational practices makes it necessary for social ethics and awareness of copyright to become part of all education so that technology moves forward together with people.

3. Innovation of AI-driven photography learning models

In the age of AI advancement, the most basic photography techniques are no longer the main focus for competencies that will be required. With photography being combined with other majors, along with implementing the "Photography"+ model is the inevitable direction and future of the course.

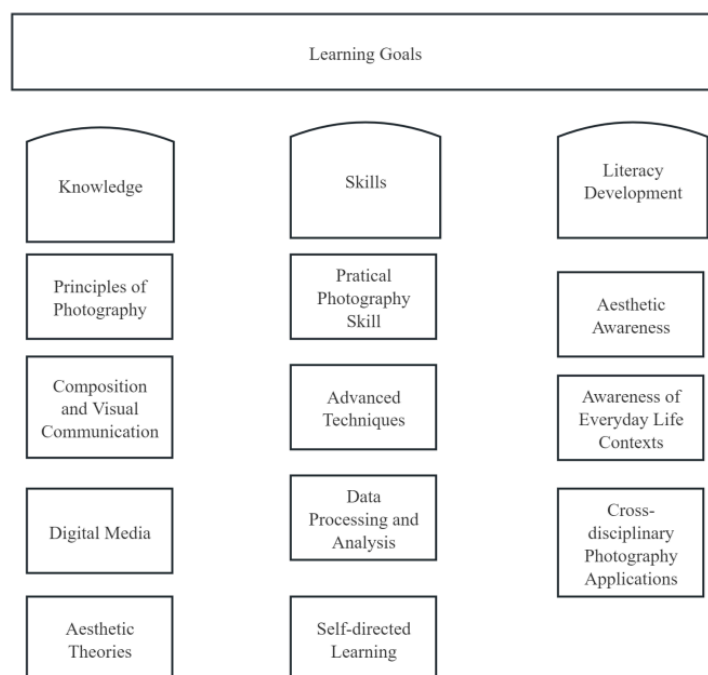


Figure 2. Advanced learning objectives model

3.1. AI-assisted practice-oriented high-level learning objectives

The impact of the era of AI on photography education is reflected at different levels. The philosophy of education, teaching methods, learning methods, educational administration, and evaluation systems. The curriculum should continuously change with changes, gradually moving from simply delivering knowledge to fully nurturing people. It should also lead to students acquiring new technologies, welcoming them and using them effectively [5].

The goal of future teaching transformation is to create "Photography+" courses that use fundamental knowledge and skills as a foundation. As shown in Figure 2, photography courses place emphasis on the intersection of photography and communication, photography and art, etc. They will concentrate more on the reflection and application of photographic techniques over these many disciplines. That is converting technical problem into practical challenge, improving multi-disciplinary learning capability, communication and expression ability and addressing real-world problem. For example, in the field of ecological conservation photography, it includes the ability to handle nature, and to do biometric identification and document creation, as well as to have ecological ethical awareness and a sense of social responsibility. Commercial photography needs skills for communication, negotiation and bargaining. Advanced goals can be achieved by AI through the analysis of data, the recognition of images, and the simulation of communication. This improves the speed and depth of learning.

3.2. AI-powered intelligent learning path planning

One very important feature of our AI era is how our relationship between teaching and learning has really shifted. Educational activities take place at any time and teachers are no longer the exclusive

source of knowledge. AI large models being integrated into intelligent learning is like both the teachers and the students working together, it takes everyone's efforts.

For the students themselves, large AI models will become very necessary intelligence. The most commonly used way to conduct personalized learning path planning is to use an AI large model to explore learning data. It involves planning learning sequences and stages based on the logical connections and learning objectives within the photography knowledge system, thereby gradually forming a complete knowledge system. Due to the special nature of photography courses, A.I technology can offer voice command and image recognition so students have a more interactive learning experience like being in a simulated shooting environment. at the same time, AI algorithm can analyze and judge students' own creations, which may lead to a person's learning [6].

Smart learning settings provide a great deal of backing to adaptive education, Students as well as teachers can produce personalized learning materials and paths for every single student: They can also adapt their teaching resources and activities in a timely fashion and consider elements like academic performance, achievements, and preferred learning styles.

3.3. "Teach, learn, test, practice" virtual-real integrated intelligent learning

There are 3 "I" features in the virtual reality system: Immersion, Interactivity, and Imagination. Because Information technology is continually developing, intelligence has gradually become the fourth "I" of the typical characteristics of virtual reality technology. To master photography takes considerable time spent practicing. Implementing integrated virtual simulation experiment for photography technology is fit for the Intelligence +Education [7,8].

Opposite from earlier virtual experiments, the photography technology virtual experiment now uses the virtual simulation experiment with artificial intelligence (AI), especially with the text to image and image to image generation feature. and this integration will improve the teach, learn, test, and practice functions because it will let students make and look at photographic images in different styles, aesthetics, and use cases really fast and easy, so they get a quick answer back. Evolutionary functionality turns virtual simulation into an essential third part, becoming a link between theoretical and experimental instruction within hybrid teaching circumstances.

These kind of AI enhanced virtual projects are used by students for self-study, and they can learn, play with the materials, the multimedia files and the theoretical evaluations of the course. the incorporation of A I gives them the chance to apply theoretical ideas by creating different photo arrangements and styles, this would help with a deeper perceptual and rational understanding. Teachers create assessments that learners use AI tools to make and improve pictures using certain methods. Integration in an organic way of the learning process, intelligent operational process and the evaluation process, thus forming tri-level education. It standardizes what are usually hard things like "class before class preview" and "class after class review".

3.4. AI-supported multimodal photography learning system construction

In this advancing age of artificial intelligence , fundamental photography methods have stopped being main capabilities. Taking advantage of the "Photography+" method that combines photography with other different fields is the direction to go. That's moving us from doing it with our hands to problem-solving type issues And developing the multiple-mode teaching materials module which is very important [9,10].

The system of multimodal photography courses stresses on efficient arranging learning activities, has troubles in both multimodal and specialized practical use. The first challenge is to form the

photography+idea of photography and the idea of integrating photography into art, culture and communication. For instance, it can be connected to ecological protection for creating image archives or associated with regional culture for visual dissemination. AI can help us in retrieving, correlating, and visualizing all sorts of interdisciplinary knowledge. Secondly is doing real life projects involving Production, Learning, Research and Application together with cooperation with industry, like photographing the photography agency students get to know the real job. Project management, work analysis and teamwork can be all made possible by the AI. Third, forming varied kinds of assessment methods (such as peer assessment and corporate expert assessment), so as to thoroughly present the results of learning, supply directions for adaptive modifications to learning routes. AI can do automatic, many-sided checking and give quick answers.

3.5. AI-based photography knowledge distillation

In photography education, the application of knowledge distillation can allow the teacher's "large model" experience to be transferred to the "small model" student, passing on ample experience and techniques. Implementing this theory will be a very high degree of design.

In the first stage of knowledge distillation preparation, primarily consists of simplifying and finding required competency. Second is building a robust knowledge map. It can help teachers a lot because of its strong abilities to build knowledge graphs and extract information: As well as conventional methods, AI-driven image creation, particularly the text-to-image and image-to-image models, gives a different method of breaking down knowledge of photography. Need to express the photographic elements in the prompt, such as composition and lighting, as well as style, clearly. It also causes the student to break down the visuals they want to view in an analytical fashion.

In the section on practical orientation, the principle of basicness is created. This principle is teacher model first, student then practice and give feedback, tailor guidance. Photography is an especially hands-on discipline, with the emphasis of what is learned shifting toward "how to do it." The essence of the teacher's practice is condensed into the center of focus. In this case, the generative capacity of AI is a formative aspect of knowledge construction. In the same way that students use an iterative process to improve upon textual prompts they use them to develop individual photographic elements, observing and noting how they effect an immediate change, in lighting for example to further strengthen their conceptions.

The flexible application of the theory of knowledge distillation needs a thorough inspection of learning scenarios. Educators need notice special divergences among students with different methods. And really the key there are the adaptive learning systems of the AIs that could take advantage of the prompt history and the outputs that they are producing for them. They can notice when there is something missing in a students knowledge of photography or a student is unable to use a prompt to express a correct visual idea. They are presenting focused exercises that are needed for an exact conceptual embodiment and correct construction of languages.

4. Conclusion

"Photography+"educaiton model has a strong technological support from Artificial Intelligence technology, that is, integrating photography with other disciplines of study, technological advancements, or practical application. It emphasizes more on the cultivation of cross-border integrative and innovative abilities, broaden the range of teaching contents, forms and assessments, create more types of learning practices and operational opportunities for college students, and provide more career development paths. We firmly believe that actively embracing AI is the

inevitable path for photographic education to achieve a major leap forward and cultivate innovative talent.

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