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The Application of Video Technology in Dance Courses

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Abstract:

Photography and audiovisual products are used in many ways as a technological means of recording coherent things. The art of dance as both visual and aural art is a good match for the nature of photographic technology. This has led to the use of photography in dance training and dance documentation as a means of giving visual feedback to dancers. However, due to the reproducibility and high distribution of photography, there are still many challenges regarding copyright and user choice of photography. This article explores the challenges and applications of photographic technology in the art of dance from a variety of perspectives. It also discusses the development of photographic technology as a means of promoting the discipline of dance at a time when virtual teaching is widely used in all disciplines. Using the example of the covid-19 online dance course, it explores the advantages and disadvantages of its use in practice.

Keywords: behavior change, video technology, education environment, online courses, physical activity, exercise, social media

1. Introduction

As a means of recording, photography is very compatible with the dual art of visual and auditory dance. Still photography can well capture the fleeting moments of dance, while dynamic photography can record all dance content smoothly, including music and stage effects. In addition, photography techniques are often used in dance teaching. While static photography can better correct movements, dynamic photography can record every second of practice and give feedback to the dancers. Both of them can provide dancers with some feedback from an objective perspective. After the advent of the Internet age, photography technology equipped with the Internet has brought many new changes and developments into dance classes. This essay will start from the influences of photography technology on dance teaching, dialectically analyze its application in dance teaching, and give application perspectives in the future application development.

2. Background of Photography Technology

2.1 Still Photography and Video Photography

The word “photography” originates from two Greek terms: “photo” from phos (meaning light) and “graphy” from graphe (meaning writing or painting). Thus, the literal definition of photography is “to write or paint with light” (Bull, 2010). Still photography is the use of light and shadow to freeze a scene in life in a moment and to render it on paper like a painting. Modern photography techniques can be used to capture many objects in motion by adjusting different shutter speeds. By varying the shutter speed, exposure value, etc. and using different lenses with different focal lengths, you can get the right picture for different photo situations and requirements (Bull, 2010). For example, when photographing the jumping movements of classical ballet, it is possible to capture the dancer’s body form in the air as well as the details of her limbs. But because photography ultimately presents a flat picture, it is also destined to capture things from only one angle. This is the case for a dynamic art like dance, which can only capture more of the moment and not a large section of it. This is where the dynamic art of photography comes into play, and video is used to record the richer content.

In fact, video cannot be considered as a merely coherent image, as it is not only the visual aspect that is captured in the recording process. Video is a technology that allows the recording of images in a consistent manner, not only with images but also with sound. Video technology can be used as an excellent tool to recreate life events and to convert them into data for storage. In the Big Data Era, we are further refining the accuracy of video and images by increasing the pixel level of our photographic tools in an attempt to make them record more accurate images. And after acquiring the real record with some photo-technical means to try to improve the accuracy of the picture more realistic (Pinoli, 2014). Once they have been converted into data that can be saved, they can be shared more easily. Similarly, access to information has become easier.

2.2 The Fit of Photography Technology and Dance

Dance, as both a visual and auditory art, has a high degree of compatibility with photographic techniques. The training of dancers, the design of the stage and the lighting are all presented visually, which is a good match for the image and picture capture of photography. The music in dance is a very important part of the whole and can be well captured by video photography.

In dance teaching, photography can provide realistic feedback to dancers by capturing movements in a freeze frame. Still photographic images can be used to assist dancers in observing their own movements in a freeze frame. Dynamic video photography allows the integrity of the movements to be viewed from a consistent perspective. New technologies such as high-speed cameras and infra-red cameras are being used to give more detailed feedback on the dancer's inner workings rather than just the movements of dancing. Video recording can be used not only for dancers to improve their overall performance, but also as an injury prevention tool (Scurlock, 2014). New camera techniques could provide a clearer view of the dancers' bodily functions during the dancing process. With traditional photography it is also possible to summarize training videos to see where dancers are more vulnerable and to help them to realize and make immediate corrections according to the videos.

The documentation of photographic techniques is also a good vehicle in dance performances. Dance performances are presented through the coordinated cooperation of many techniques, and most dance performances are now performed in dance theatres with a quite professional environment. Photographic techniques can be used to capture and record the exciting moments in dance performances as a collection of information and popularization of the art. The composition in photography also fits well with the use of space in dance. It is important to find the right composition in photography to better show the artistry of the work. The same is true when it comes to the use of the stage in dance, where the stage is used as a canvas and the space is fully exploited to show many transformations of the dance. The link between different spaces is very strong in photography and dance, and the similarities make the two more intertwined.

3. The Use of Video Technology in Dance Education

3.1 Dance Learning Through Video Technology

The learning of dance has always been taking the form of teaching by talking, but experimentation with a variety of techniques is a constant work in the whole developing progress. For scenarios where face-to-face classes are not possible anymore under the special circumstances nowadays, constant experimentation with video technology has been ongoing. According to a study by researchers in Barcelona, Spain, who divided students with no basic knowledge into an oral instruction group as well as a video instruction group, the video instruction group ended up with much higher learning outcomes than the students from the other group (Tsiatsos et al., 2010). Video teaching makes the three-dimensional and interesting approach possible for dance teaching with a combination of flexibility of location and time. To some extent, these two are balanced when it comes to the conflict between flexible teaching and clear teaching. In addition to this, many dance teaching materials are also available in video format, such as the Beijing Dance Academy's amateur dance grade exams, which proves that video teaching in dance has already been possible and is being used nowadays. The recording of videos converts the live art of dance into storable data, facilitating the sharing and exchanging of information. In the past, video teaching products were often distributed on DVD, VCD or as paid or free MP4 copies.

As the internet continues to evolve until the creation of 5G networks today, the creation of 5G residential broadband for people means more options for Internet services and much faster Internet speeds (Liberg et al., 2020). Faster video uploads to the internet means that more people will be more willing to upload their video materials on the internet platforms for sharing, as well as for the exchange of information for dancing. Telecommunications, the growth of video sharing sites (especially YouTube) and social media have led to an exponential increase in the number of people interested in dance and dance education (Parrish, 2016). The interactive platform for video has increased and access to content has become easier. You can search according to your interests and find the video information you need more quickly. And these video software have interactive features such as comments and likes, allowing everyone to evaluate and exchange information closely. This environment also makes it easier for video producers to communicate with each other, simply by discussing

topics of interest in the comments section to obtain more enlightened information. The sharing of videos has also changed from a one-sided sharing mode to an interaction of content between the two parties, which has a positive effect on the promotion of dance learning. The strong reliance of society on social networking software such as Facebook and Twitter has also created a good platform for the exchange of information about dance in the process of establishing corresponding interest groups (Parrish, 2016).

3.2 Learning Feedback Through Video Technology

The ability to recognize self-learning is very important in the learning process and is important in improving one's abilities (Billing, 2007). However, in most learning self-feedback is abstract in nature and is subject to interference from your impressions of the learning process and your evaluation of the results. In dance learning, self-feedback becomes even more difficult because it is impossible to see visible changes in a very short period of time and most learners make progress day by day. Self-feedback becomes more difficult over such a long period of time. Based on previous research trials by academics, the learning process of students who are learning dance is video-recorded in stages, with each stage of practice video summed up and finally the student is allowed to visually watch their own practice process (Leijen et al., 2009). The final results showed that the majority of students gave positive comments on this approach, while others who took part in the survey said they "thought it was like watching something that was happening". The video recording fits in well with the long training period of the dance and allows for a consistent and easy recording of the training process. Watching each individual's progress in such an objective environment is not only a way of gaining a better understanding of oneself, but also an inspiration.

It is not only the students who need self-feedback in dance teaching, but also the teachers who need to look at their own lessons from an objective perspective. The critical thinking of dance educators can have an advantageous effect on their own teaching (Warburton, 2004). Watching and analyzing your own teaching videos and learning from them can also improve your own teaching (Lee & Wu, 2006). The video technology restores the teacher's teaching while linking to the students' reactions, potentially allowing dance teachers to see more details that were overlooked in the lessons. It is a good cycle to look at the content of the class from an objective point of view, to analyze the students' reactions to the knowledge taught, and eventually to summarize the self-feedback and apply it to subsequent classes.

As the recording of a video is not a mere self-experience that exists in the mind of the individuals experiencing it, multiple people can comment on the content of the recorded video as long as it is ethical and with the informed permission of the person who is concerned. Such a format allows for both advice to the participants and for mutual sharing and learning, facilitating both sides of the video viewing.

3.3 Demonstrating Success Through Video Technology

The process and outcome of a dance performance is not only a process of continuous improvement for the dancers, but also the result of the combined efforts of the instructors. Each dance is a testament to a period of hard working and could be viewed as a milestone. It is quite common for many venues to offer video filming services during the performance, or for the performers to get someone to record the performance, so that it can be easily archived and also be enjoyed in retrospect. The data format of the video is easy to edit, and the video can be beautified and manipulated to make it look more collectible when saved to your own requirements (Kelley, 2016). When editing, you can use software such as I movie and PS to add credits, subtitles, dates and end credits to the video as required. This is a great way to make the video clear for years and is also an efficient way to showcase the time and sweat of the dance study.

4. The Challenges of Video Technology

4.1 The Storage of Video Information

There are different video information storage devices such as operating chip, interface chip, processor and memory multi-channel process (LEI et al., 2015). In the filming equipment, it is mainly by the chip as well as the devices with the memory card to carry out temporary storage, and the high quality of the filmed video in addition to the requirements of the filming equipment, the memory card for the speed of data storage can also determine part of it. When shooting HD videos, if the storage card chosen is too slow, it will affect the picture quality and in some severe cases the sound and picture may not match. And when shooting longer videos, if the memory on the card is not sufficient it can interrupt the shooting from timed to time. Therefore, when choosing a temporary storage chip, you should choose according to the specific situation, and when you need to shoot HD videos for a long time, you should choose a faster storage speed with more memory.

The same problem of storage space is faced when transferring devices from temporary to long-term storage. In this day and age, due to the fast development of video technology, the database produced by the final filming device is generally very large. Therefore, finding a memory container that can hold such large data files for a long period of time is a wise choice. The first and most common way is to place it directly in a personal

computer but storing too much stuff may lead to computer performance degradation. Secondly, with the growing popularity of removable hard drives, many people will store video directly into a removable hard drive, but this method can only be used when there is an intermediate reading device to view the stored content. As the internet continues to develop, more and more people are choosing to store their data on a cloud-based network drive, which frees up intermediate access devices and allows for easier downloading from anywhere with internet access. However, as cloud computing services rely heavily on data networks, the continued rapid growth of data in external private clouds has accelerated downstream network bandwidth saturation and data overruns in public clouds, giving rise to client-side cloud caching as a solution (Papasratorn et al., 2013). This allows the storage benefits of cloud drives to be balanced with the need for large space for video storage.

4.2 General Data Protection Regulation (GDPR)

In 2016, the GDPR has been adopted to replace the Data Protection Directive from 1995 (Voigt & von dem Bussche, 2017). The GDPR applies not only to companies in EU countries, but also to companies whose users are citizens of EU countries and has therefore been described by the media as the strictest information security regulation. The GDPR also contains separate regulations for minors, who are not aware of the risks of information leakage and therefore have special protection for their information (Sharma, 2019). YouTube, the most popular video platform, must also comply with this regulation. No more invisible advertising insertions in the interface of videos, but placing these insertions in places where users can choose to accept them as an improvement to the online environment (O'Reilly, n.d.). Many of those who are studying dance are minors, and the special protection afforded by the GDPR to the safety of minors on the internet is a protection of their psychological and developmental processes. The introduction of exclusive versions of many software for minors is also a way of protecting an online environment where parents are unable to supervise in real time. However, the challenge of protecting information on minors' use of online video learning continues, as there are no fully developed legal regulations outside the EU.

4.3 Dance Education Environment

Based on years of experience in teaching dance, the teaching of dance is predominantly live, with video lessons accounting for only a small proportion of the teaching. According to a scholarly research survey, 43 international school students were put through a virtual learning environment to explore how dance students experience learning in an international distance learning program in an e-learning format through a virtual learning environment platform (Leijen et al., 2008). Based on years of experience in teaching dance, the teaching of dance is predominantly live, with video lessons accounting for only a small proportion of the teaching. According to the scholarly research survey, 43 international school students were put through a virtual learning environment to explore how dance students experience learning in an international distance learning program in an e-learning format through a virtual learning environment platform. Ultimately, feedback on a number of tasks revealed that distance learning only had the highest completion rates for tasks used for written submissions, while other tasks were not as positive. This also shows that the answer to the question of video teaching being less effective than live teaching at this stage of the dance teaching environment is yes. The learning of dance is an individual task from the beginning of the basic training and cannot be taught in a writing mode, so video and new media are more suitable for the expression of choreographic inspiration or dance appreciation.

5. Video Technology Under Special Circumstances (COVID-19) in Dance Teaching and Future Developments

5.1 Video Technology Under Special Circumstances (COVID-19) in Dance Teaching

COVID-19 as a global public health and safety outbreak, the sudden spread of virus has left more industries unprepared for the test (Wilbanks et al., 2020). It was as if the world had hit the pause button in order to get through this outbreak quickly and safely, so that the efforts of all these on the front line fighting the epidemic would not be in vain. The education sector was unable to start school as normal, many schools as well as extra-curricular classes started to use video lessons to teach as a new method to tackle with the new situation. There are two types of classes: asynchronous classes, where videos are recorded for teaching, and synchronous classes, where videos are broadcast live for teaching. The video-recorded asynchronous classes are not very different from the usual video classes, as they are recorded to share lessons and receive feedback on tasks. It is quite obvious that the proliferation of live video classes for a better interactive classroom experience is necessary in the situation of the epidemic. The most popular live video software, ZOOM, dominated the classes during the epidemic.

ZOOM stands out from the eleven software packages based on the experience of academics because it does not limit the number of devices that can be connected to the same session (Li, 2020). During a lesson, the teacher and many students need access to two devices online at the same time, because when one device is taken from a distance using the device's camera, it is often not clear enough to capture the picture and sound of the lesson, so

the other device needs to be closer to them to capture the picture and sound. The simultaneous capture and transmission of picture and sound during the live streaming process allows the teaching of the course to be carried out with minimal disruption. As long as the network is up to speed, the experience of live video course content can be maximized within the constraints of the environment.

Dance classes are also used as an intervention and relief for anxiety due to their use as a form of exercise therapy (*Health and the Power of Dance*, 2008). This is exactly why some schools have started to offer online dance classes to relieve students' anxiety about not being able to go out at home. The course has been well received by the students who have taken part in the course and the school has encouraged them to invite their family and friends to join in (Bohn & Hogue, 2021). The video dance classes were an efficient way to reduce anxiety at home by exercising and stretching the body, and the interactive format of the live streaming gave people in closed doors the opportunity to communicate.

5.2 Development of the Use of Video Technology in Dance Teaching

Then after COVID-19, live video lessons became known as a new possibility for teaching and learning, which established new points for the development of video technology in dance teaching. However, there are still many irrational aspects of such distance teaching that need to be slowly improved in the future.

(1) Video classes are flexible in terms of location, but dance classes in smaller residential spaces require more consideration for safety issues and the proper choreography of the course content.

There are many household items in the home environment and teachers should remind students to remove obstacles under their feet before the lesson.

Proper warm-up activities could help to stretch the body and reduce the likelihood of injury due to stiff limbs.

The small space of the home environment makes it more appropriate for movements that require a large space to be performed in situ or in a small range of motion.

(2) Measures to regulate teachers' qualifications and course content

(3) Establishing appropriate course content standards for online classes and researching the most appropriate movements to practice during the online phase

(4) Research the most suitable combination of equipment for online classes, combining course graphics and sound with self-filming

(5) Dance is taught using more of a face-to-face approach and can be taught in relation to the main class by incorporating the nature of the live classes once the emergency period has passed. For example, answering questions, summarizing lessons, giving feedback on lessons, etc.

The practice of dance requires long and consistent training to achieve the best results. The epidemic has brought about not only a depressing life, but also thoughts on new forms of dance teaching. Video technology played an important role in the teaching period of the epidemic, and after the resumption of face-to-face classes in the latter part of the epidemic online classes can still be used as an aid to teaching with appropriate development and improvement.

6. Conclusion

Video technology has evolved from its beginnings as still photography to the current stage of live streaming, and at each stage there is a positive impact on the teaching of dance. There are still challenges with video technology in many areas, and the positive impact in more aspects of dance teaching as well as education and teaching has pushed it to continue to improve and continue to contribute to the work of dance teaching.

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