Teaching Tips/Notes NACTA Journal

Identification of Technology for Enhancing Virtual Classroom Instruction of Hands-On Experiences in Animal Sciences

Introduction

Instructional techniques were disrupted as a result of the global pandemic COVID-19, requiring academic institutions to swiftly modify methods of instruction mid-semester. Modifications or flipping classrooms can be a challenging task and typically takes place between semesters when adequate planning and modification can occur. As a result of these changes occurring during a “live” semester many instructors of record faced difficult transitions. The restrictive time frame along with a potential lack of online instructional knowledge, lack of available technology, and the required modification of laboratory experiences to a virtual landscape contributed to the challenges faced.

Conversion of Animal Science focused coursework to online platforms should strive to maintain the traditional “hands-on” experiences even in a virtual environment. Traditional animal science instruction within the academy has relied on visual references during course instruction. Use of the virtual platforms Zoom, WebEx, GoToMeeting, and Microsoft Teams have provided live engagement with course participants while Canvas and Blackboard have provided a location for delivery of course work and testing platforms. However, instruction through these platforms can be limiting due to available bandwidth especially when utilizing visual reference examples throughout the instructional period.

Keeping visual reference instruction (Laboratory Experiences) for course participants in Animal Sciences allows the student to enhance their critical thinking abilities. Visual references provide the potential for the real-time presentation of critical aspects of animal production including animal diet formulation, the calculation of genetic makeup, reproductive anatomy and physiology, visual interpretation of intramuscular fat deposition, visual appraisal of livestock animals, along with the management of these aspects. These references are difficult to describe in detail through classroom discussion let alone tie to a reading reference that provides a clear and concise summary. In an effort to create user-friendly, and applicable visual refences, below are some examples of technology resources that could facilitate the effective conversion of Animal Science laboratory learning experiences to a virtual environment.

Procedures

During the initial days and weeks of campus closures across the nation as a result of a global pandemic (COVID-19), it became apparent that the academy lacked adequate access to available technology for creating virtual learning experiences. In most campus systems there exists a centralized technology platform for creating digital material but it is often limited by funding, available resources, and works with limited staff. These centralized technology “hubs” are often under-utilized by the instructional community due to limited experience with video editing, voice over inclusion, or filming. With a rapid adoption of a digital learning landscape during the recent global pandemic, the lack of technology within departmental units for creating and supporting instructional references was exposed. In an effort to minimize the production to instructional time, creating an internal technology “Hot-Spot” internally. Instructional teams are tasked with developing a list of technology could create a categorical system based on level of use difficulty when searching for technology to apply in the instructional delivery of their course material. Recommended categories include UF=user-friendly; MF=moderately-friendly; TF-tech expert-friendly) and cost driver (LC=least-cost; MC=moderate-cost; HC=high-cost).

The department of Animal Sciences at Auburn University convened an ad hoc committee consisting of faculty representing instruction across the entire curriculum. Initially we identified instructional areas requiring technology to allow delivery within a virtual environment. Overall, we identified the ability to produce and edit high quality video in both remote and controlled environments as the key requirements for transitioning our curriculum to a virtual environment. Furthermore, it was deemed important to alleviate instructional delays by identifying technology that is user friendly. In order to facilitate identifying technology we consulted with a myriad of technology experts outlining our equipment needs and resulting in an affordable suite (Table 1) of technology. For use in capturing “live” streaming and recorded video, a GOPro Hero8 can be identified within UF and MC. The GOPro is linked to a cellular device via bluetooth technology and allows the user to control the operation of the camera in a variety of formats and speeds. Images and video are stored on a memory card which can be downloaded via desktop software for editing. To create videos with little movement to create a better experience for the viewer. To accomplish this effectively, the DJI Osmo Pocket camera (MC) is an excellent option for the UF technology beginner. This filming technology contains a self-adjusting gimbal to reduce any fluctuations in view from side to side or up and down. The DJI is another technology that can easily connect to most cellular and tablets for ease of operation. For the traditional filming and photo capturing purest, a camcorder could be used. A camcorder with built-in twin camera and wifi features allows for multiple viewpoints to be simultaneously recorded and the user can control the camcorder from a cellular device. The camcorder remains a HC item, that many if not all will find fits in the UF category.

For ease in capturing video, several mounting and tripod accessories (LC) can be added for enhancement of all technology. Chest, tri-pods, and point-of-view mounts are available for enhancing the ease (UF) of capturing both video and photograph formats. Additional

LC items to consider include Movo Microphones, Light Ring, USB Microphone and Memory cards for storing videos and images until editing can be completed.

Captured video and photo content will require modification before uploading to either a digital platform such as CANVAS or BLACKBOARD or even a YOUTUBE channel. Countless platforms for editing exist from LC to HC and UF to TF, identifying the editing platform for a myriad of users can be the most difficult decision a tech cohort will address. Seek expert tech editing counsel for guidance in the identification of the platform that meets the operating system, costing structure and user needs of the faculty, staff and students.

Assessment

Adoption of technology especially for the academy can be very intimidating initially due to the added time for engaging with new technology platforms. Identifying technology that allows for greater comfort by the user is paramount to inclusion of technology for the instructional landscape. As a case-study and phemenological evaluation to-date, users have expressed positivity about its ease of use, reasonable cost and potential utility in a variety of Hy-flex models of instruction necessitated by Covid-19.

Table 1. Technology[1] toolkit selected and purchased for adoption within an animal sciences department

Video Equipment		
Product Description	**Company**	**Estimated Cost**
Camcorder Vixia HF R700	Panasonic	$1,000.00
Pocket Gimbal Camera	DJI Osmo	$370.00
GoPro Hero8	GoPro	$350.00
Microscope Camera	ProSciTech	$300.00
Audio Equipment		
Portable Microphone	Movo	$40.00
Desktop Microphone & Filter	Blue Yeti	$160.00
Studio Monitor HS8	Yamaha	$370.00
Editing Equipment		
Mobile Monitor	Vizio	$530.00
Desktop Intel Core i9700	Dell	$1,175.00
Desktop Monitor	Acer	$180.00
Creative Cloud	Adobe	$150.00
Accessories		
Microscope Eye Piece Adapter	ProSciTech	$60.00
Tripod	UBeesize	$20.00
GoPro Chestmount	GoPro	$35.00
Greenscreen	Neweer	$230.00
Light Ring	Neewer	$130.00
Memory Card & Adapter-256GB	Samsung	$50.00

[1]Technology sourcing and purchase was conducted using online resources such as Amazon		

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