

## **FACULTY MEMBERS' TECHNOLOGICAL PROFICIENCY, SUPPORT AND OBSTACLES**

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### **ABSTRACT**

The advent of flexible online learning because of the pandemic has challenged Higher Education Institutions to think of innovative, creative, and effective ways to deliver lessons online. Video-based learning modules have become necessary for faculty members to deliver their online classes. With this, the researchers assessed the technological proficiency, support, and obstacles of the Department of Arts and Sciences (DOAS) faculty in producing these instructional videos. Through a survey administered among the participants from different subject clusters of the department, findings showed that most respondents are proficient in operating a camera and can execute various camera shots, angles, and movements. However, they are not well-versed in the concept of camera exposure which could improve footage quality. Respondents are also proficient in editing their instructional videos by adding music, voice-over, texts, and sound effects. There is little training experienced in making instructional videos as respondents claimed, although they have access to technology which allows them to create such videos. Respondents are divided in receiving further training; some expressed a positive attitude towards it while the others saw obstacles such as the availability of gadgets and software, time amidst their full-time work, and being new to concepts on videography. Researchers recommended a video-based learning module that allows for flexible learning among the faculty members to further improve instructional videos given the constraints expressed.

**Keywords:** College Instructional Videos, Technological Proficiency, Flexible Learning

### **INTRODUCTION**

The advent of flexible learning, online learning, and asynchronous and synchronous sessions because of the pandemic challenged Higher Education Institutions and HEIs are thinking of innovative, creative, and effective ways to deliver their lessons online. The use of video-based learning modules has become necessary for faculty members to deliver their online classes.

The pandemic, as well as the recent advances in technology, have created wide opportunities for teachers to how they deliver their lessons to their students. Faculty members conduct their classes synchronously, asynchronously, and through video modules. In addition, web-based classroom management systems, such as Blackboard, Moodle, and Google

Classroom, have helped the faculty members in delivering the lessons and disseminating modules and other academic materials [1].

In an online course, video is often the primary method to deliver instructions. Therefore, instructional videos or video-based learning modules play a significant role in online learners' learning experiences. Video is best used as instructional material to capture experiments for presentation [2].

Video-based instructional materials demonstrate a high level of craftsmanship to their users and they spend less time performing their tasks during their practical lessons [2]. Moreover, the use of video-based instructional materials for practical lessons and experiments could result in less waste of materials, injuries to learners, and damage to equipment. Though sometimes it is expensive to produce, it is very useful when used to show practical and real-life activities.

It was also noted that video is a successful medium as instructional material because its characteristics, audio and visual, provide a multisensory experience to its learners and viewers [3]. Moreover, he added that the learner has control over the video-based instructional material, as he/she could play, replay, pause, and rewind specific parts of the lesson which could help develop the competency of the learner. The video also allows its learners to view actual objects and realistic scenes in motion and listen to its narration (audio).

Video-based learning has long been used to supplement classroom teaching. Video has been used in a variety of ways to support various pedagogical strategies successfully [4]. Videos could be used to present a problem, present a solution to the problem, and provide information about the topic [5]. Aside from the use of video as instructional material, it could also be used to present news or film clips. Video could also be used as video lectures, video tutorials, short knowledge clips, and "how to" videos. Moreover, the advancement and development of fast internet speed at home, and in school, and the use and access of "online classrooms" to personal devices such as tablets and smartphones posed a significant impact on the use of video-based learning in higher education.

The use of video to review the lessons and lectures in advance has become a new phenomenon. It was concluded that video-based learning to support classroom teaching can make a beneficial learning experience and strong outcomes for learners [4].

In addition, access to instructional videos received higher levels of student satisfaction [6]. Problem-based learning would also prefer video over text [5]. It was reported that videos are enjoyable to watch, satisfying, and motivating and are very helpful and useful for learning because of the independence they provide, having control over when and where to learn/watch the video, and having their own pace of learning which encourages student engagement [7].

The incorporation of video within a course framework influences the motivation of the students to engage in the course materials which suggests that video aids engagement with the course content because of the video. On the other hand, self-regulation, harder to manage remotely, is the challenge that learners face with the use of video as instructional material. Studies also found that computer anxiety is a key factor in affecting learner satisfaction in e-learning [4].

The use of video in education, specifically in online classes, was made possible by the ready-to-use camera available in gadgets like mobile devices and laptops. However, instructors have to make deliberate decisions in selecting the most appropriate available technology and resources as well as the content in creating video modules so that students will achieve a desirable outcome [8].

The downloadable video editing tools and free media-sharing sites made it possible to easily produce and distribute educational videos online. New computers equipped with software for video editing have made it easy for educators to create instructional videos.

However, this does not automatically equate to the production of high-quality videos that could be effectively used by teachers [1].

Also, the social presence of instructors plays an important role in student engagement in video-based instructional materials. By creating educational videos, instructors can create intimacy through visual presentations which may promote social presence in distance learning [9]. Additionally, students occasionally would like to hear their instructor's voice [10]. While strong teacher presence contributes to the students' positive attitude toward the course [9].

However, to make the faculty members an effective educator in an online setup, academic heads must understand the current levels of technological expertise and patterns of the faculty members. Technological surveys could provide informative insights and the need to be an effective educator online.

Moreover, the use of proficiency measures to better understand the needs of individuals, specifically faculty members, has influenced how technology will be maximized and utilized to improve the student learning experience. This will also help us to introduce new teaching and learning technology and pedagogy in online learning [8].

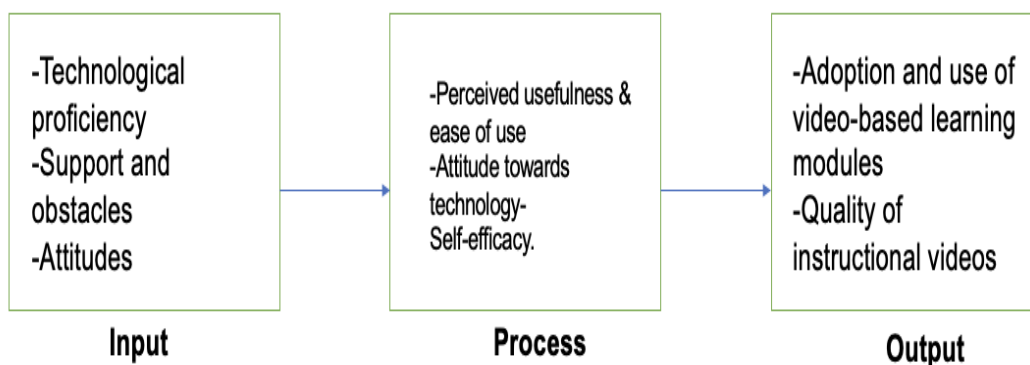
This research study aims to achieve the following objectives:

- Assess the technological proficiency and support of Department of Arts and Sciences faculty members during the 2nd Semester, Academic Year 2021-2022 in making instructional videos for students
- Describe the obstacles of the respondents in producing and training to make instructional video materials

### Conceptual Framework

The Technological Acceptance Model (TAM) is used as the theoretical framework for this study. TAM proposes that an individual's acceptance and use of technology are influenced by perceived usefulness, perceived ease of use, and attitude toward the technology. It is considered the most influential and commonly employed theory for describing an individual's acceptance of information systems and has evolved to become a key model in understanding predictors of human behavior toward potential acceptance or rejection of technology [10].

In the context of this study, TAM is used to understand how the faculty members perceive the usefulness and ease of use of the technology used in creating instructional videos, as well as their attitudes toward learning how to produce instructional videos for online learning. Indeed, this framework can help provide insights into the factors that may influence the adoption and use of video-based learning modules among the Department of Arts and Sciences (DOAS) faculty.



**Figure 1. Input-process-output Technological Acceptance Model**

Based on the Technological Acceptance Model, it is proposed that the respondents' technological proficiency, obstacles, and supports have an impact on the adoption and use of video-based learning modules which this study aims to give insights on, providing a structured approach to the investigation. The input component includes technological proficiency, obstacles, supports, and attitudes toward video-based learning modules. This is then interpreted in the constructs of the TAM model can help determine the adoption and use of video-based learning modules and the quality of instructional videos produced by DOAS faculty (output).

**RESEARCH METHODOLOGY**

The result of this study was used as a basis for the topics of training and webinars that will be provided for the faculty members of the Department of Arts and Sciences of BPSU-Main Campus.

This research study used a quantitative approach. Quantitative research deals with numbers or numerical data such as height, width, length, age, speed, time, size, and temperature, among other things that can be measured. Descriptive research describes what exists and may be able to help uncover new facts and meanings.

The participants of the study are faculty members of Department of Arts and Sciences (DOAS) of the BPSU-Main campus for the academic year 2021-2022. The online survey was conducted to faculty members of DOAS through online survey forms from June to August 2022. A total of 33 participants answered the survey.

The first part of the survey measures the technological proficiency of faculty members. It also explored the proficiency of the respondents in video post-production. To determine the technological proficiency of faculty members in video production for instruction, technology operations, and concepts are explored using a self-made questionnaire. This was then validated externally for language and content. Participants were asked to rate their proficiency in camera use, and editing, and describe the access and support they have with technology that aids them in creating videos. The second part of the survey includes the technological support of respondents in producing video materials and obstacles expressed by faculty members that they might experience in conducting training on video production instruction.

Statistical Package for Social Sciences or SPSS was utilized by a statistician to analyze the data collected from the respondents through an online survey. Descriptive statistics is used to summarize the data frequency with the following formula:

$$\% = \frac{f}{N} \times 100$$

The statistical method used is frequency analysis which is a descriptive analysis that shows the number of occurrences of each response chosen by the respondents.

**RESEARCH FINDINGS**

**A. Profile of the Respondents**

This section presents the respondents' profiles according to sex, cluster, and years of teaching experience.

**Table 1. Profile of the Respondents According to Sex**

SEX		
	Frequency	Percent
Male	13	39.4
Female	20	60.6

Total	33	100
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The respondents were faculty members of the Department of Arts and Sciences (DOAS) of Bataan Peninsula State University Main Campus. Out of the 33 respondents, 13 are male and 20 are female.

**Table 2. Profile of the Respondents According to Cluster**

Cluster	Frequency	Percent
Philosophy	2	6.1
Physical Education	3	9.1
Language	12	36.30
Social Sciences	2	6.1
Mathematics	6	18.2
Science	6	18.2
Foreign Language	1	3.0
Communication	1	3.0
Total	33	100.0

The Department of Arts and Sciences faculty members are grouped according to clusters by course being taught. The table above enumerates the number of respondents who participated in the survey and their respective clusters namely; Philosophy, Physical Education, Language, Social Science, Mathematics, Science, Foreign Language, and Communication. The majority of the participants come from the Language cluster with 36.3% followed by Mathematics and Science with both 18.2%.

**Table 3. Profile of the Respondents According to Years of Teaching Experience**

Years of Teaching Experience	Frequency	Percentage
0-5	4	12.1
6-10	2	6.1
11-15	6	18.2
16-20	5	15.2
21-25	4	12.1
26-30	10	30.3
31 years above	2	6.1
Total	33	100.0

The majority of the faculty members who participated in the study had 26-30 years of teaching experience followed by 11-15 years. Those with 16-25 years of experience comprise 15.2% of the respondents, ranking third. Those with 0-5 and 21-15 also make up 12.1% of the total number of respondents.

**Technological Proficiency of the Respondents**

This section presents the capability of the respondents in operating cameras and then putting together this captured footage using applicable software for the purpose of coming up with finished video material. The proficiencies discussed here include the use of a digital camera and execution of different shots in producing footage to be used; the use of video production software and the inclusion of various elements such as texts and sound.

**Respondents' Proficiency in Camera-work**

**Table 4. Respondents' Proficiency in using a Digital Camera in Producing Footage**

Use of a Digital Camera in producing footage	Strongly Disagree		Disagree		Agree		Strongly Agree	
	Percent		Percent		Percent		Percent	
Can operate a camera that can capture video	1	3.03	2	6.06	7	21.21	23	69.70
Can execute various camera shots	2	6.06	3	9.09	11	33.33	17	51.52
Can execute various camera angles	2	6.06	4	12.12	16	48.48	11	33.33
Can execute various camera movements	2	6.06	6	18.18	16	48.48	9	27.27
Have an understanding of the camera exposure triangle	3	9.09	13	39.39	12	36.36	5	15.15

The table above shows the respondents' proficiency in using a digital camera to produce footage which can later be used for a video production intended for a specific purpose- in this case, instructional videos.

Twenty-three or 69.70% of the respondents know how to operate a camera to capture video. This is a basic proficiency needed as camera users should be able to select between picture or video functions so that they can record or capture real footage.

Camera shots which vary according to the distance of the shooter to the subject of the video provide emphasis and focus to the learner. Examples of these are the close-up (extreme or medium), wide shot, medium shot, or full shot among many others which could vary according to the duration of the shot (long or short). Seventeen or 51.52 % of the respondents strongly agreed with the statement that they can execute various camera shots, followed by 11, or 33.33% who simply agreed to this. Being aware of these various shots when to use them, and how to execute them in making instructional videos could make the material more engaging, given the variety it provides to the viewer.

On top of camera shots, the instructor could also resort to various camera angles in capturing something. These camera angles convey different meanings which denote subject and viewer relationship [11]. Examples of these are the low-angle, high-angle, or eye-level camera shots which are used by video directors for specific purposes - either to denote something or a conscious decision about which way to frame a certain subject, procedure, or experiment. Sixteen or 48.48% agree with the statement that they can execute various camera angles; 11 or 33.33% strongly agree with this.

The camera can be moved from left and right (panning) and top to bottom (tilt) while placed in a mounting device. This is used to follow a subject or change focus. This is especially useful when doing video tutorials or "how-to" videos. Sixteen of the respondents or 48.48% agree with the statement that they can execute such proficiency in using the camera, followed by 9, or 27.27% strongly agree making up the majority of the respondents who have the capacity to emulate different camera angles.

Having an understanding of the shutter speed, ISO (International Organization for Standardization), and aperture settings, or the exposure triangle, of a digital camera is a proficiency that enables the instructor to come up with proper footage in terms of subject

lighting and exposure. Having a correct exposure is a combination of those three factors [12]. Otherwise, the footage could be over or under-exposed, meaning, the brightness of certain parts of the footage is compromised, making it too bright or too dark for the learner to see. Thirteen or 39.39 % disagree that they have an understanding of these concepts, combined with 12 or 36.36% who agree.

**Respondents' Proficiency in Video Post-Production**

**Table 5. Respondents' Proficiency in Editing and Exporting the Footage**

<b>Editing and Exporting Footage</b>	Strongly Disagree	Percent	Disagree	Percent	Agree	Percent	Strongly Agree	Percent
can edit or put together video footage using applicable software	3	9.09	15	45.45	9	27.27	6	18.18
can use applicable software to add sound, text, images or other footage to the video	4	12.12	11	33.33	10	30.30	8	24.24
can record a voice-over using available equipment such as a smartphone, microphone, earphones, or other hardware capable of capturing sound	2	6.06	5	15.15	13	39.39	13	39.39
can export or save my finished video footage/s in an application as a single playable file	4	12.12	12	36.36	4	12.12	13	39.39

The table above exhibits the proficiency of the respondents in terms of making use of the footage collected and adding helpful elements to form an instructional video.

Footage recorded in a digital camera forms separate files once the shooter stops recording. Various instructional videos entail stopping and resuming recording to feature different subjects or phases of an experiment. This footage has to be spliced or put together using an applicable video production software - a competency needed to combine various footage to create a single sequence that makes up the instructional video. The majority of the respondents or 15 of them (45.45%) disagree with the statement that they can use applicable software to do this. Equally, 15 seem to have the competency as nine (27.7%) agree and six (18.8%) strongly agree. Using downloadable video editing tools made the production of educational videos easier although the quality is not guaranteed and is still up to the editing competency. Moreover, a respondent elaborated that although efficient, videos take more time to produce. "A not-so-skilled person like me can take days to produce just a 30-minute video unless the video is an impromptu discussion that needs no editing at all," they said.

Eighteen respondents agree with the statement that they can use the video software to add sound, text, images, or another supporting video, 30.30% agree and eight, or 24.24% strongly agree. Alternatively, 15 or 45% claim they cannot do this. Having these elements added makes the video more engaging and distinguishes it from mere text learning [6]. Examples of sound elements that can be added could be background music which fits the mood of the subject or topic, or sound effects or actual sound which demonstrates a concept. During a video lecture, images such as graphs, tables, or pictures could be incorporated similar to visual aids during a face-to-face lecture.

Most instructional videos have voice-overs which enable the instructor to discuss concepts in place of actual on-camera footage of them speaking to the camera - with only additional elements such as sound, images, or supporting video. This competency entails

recording themselves using a smartphone or a separate microphone plugged into a laptop and then transferring the recording audio to the video editing software. Most participants can record such voiceovers with 13 (39.39%) agreeing and 13 (39.39%) strongly agreeing. Using the voice-over method can provide an easier option for instructors as they no longer require intricate video set-up to record themselves, but provide a personal touch by lending only their voice to the instructional material.

After adding elements to the instructor's video footage of themselves, it is necessary to export or save this within the software application for it to be a singable playable which can now be distributed to the learners through an online platform. Having this playable file accessible anytime and anywhere, is especially helpful for students to catch up with the lectures [4]. Thirteen or 39.39% strongly agree that they can form the combined footage and elements in one single file and four (12.12%) agree as well. On the other hand, 12, or 36.36% disagree, while four (12.12%) strongly disagree. Having this final competency is the culmination of the two preceding skills which are shooting and editing footage. Without such, the instructional video will not exist and may not be distributed or be accessible to learners.

C. Technological Support of the Respondents

**Table 6. Technological Support of Respondents in Producing Video Materials**

<b>Technological Support</b>	<b>Strongly Disagree</b>	<b>Percent</b>	<b>Disagree</b>	<b>Percent</b>	<b>Agree</b>	<b>Percent</b>	<b>Strongly Agree</b>	<b>Percent</b>
have previously produced video/s for the purpose of instruction	5	15.15	3	9.09	14	42.42	11	33.33
have received training or related workshops/seminars on how to put together instructional video materials	9	27.27	14	42.42	5	15.15	5	15.15
have access to equipment or technology to produce instructional videos	5	15.15	5	15.15	15	45.45	8	24.24

The table above illustrates the previous experience, preparation, and access to technology for the respondents to create videos for instruction.

The majority of the respondents have already produced a video for instruction. Fourteen of the respondents or 42.42% have asserted that they have produced videos, and 11, or 33.33 % strongly agreed that they have previously done. Given the situation brought about by the COVID-19 pandemic during the time of data collection, respondents have already tried producing videos for instruction in place of online meetings as these modes of instruction are reliant on the quality of internet connectivity and accessibility of learners to computers [13]. Instructional videos uploaded online which can be accessed by the student provide convenience to the learner, and provide a sense of presence of the instructor at any time compared to the usual text documents, and not as taxing as the synchronous online meeting. One respondent asserted that “video production would help in facilitating learning. Teachers should learn the skill to increase engagement and motivation among students.”

On the training or related workshops on producing instructional videos, 14, or 42.42% disagree and 9, or 27.27% strongly disagree. This means that some respondents have resorted to producing instructional material without training, or some might have not tried their hand at producing them as they have not yet been familiarized with the process. Producing videos can now be learned even without proper training as there is a multitude of content that aid an eager instructor to do so. One could have resorted to YouTube instructional videos to go about the



intricate process, especially in shooting and editing. Yet this informal learning comes without assessment and there are concerns with its integrity [14] given the context of an instructor should be heavily reliant on peer-reviewed or edited material such as books and journals.

The majority of the respondents have access to equipment that enables them to produce instructional videos. Fifteen (45.45%) agree and eight (24.24%) strongly agree with the statement that they have the technology to come up with such material. Given the capacity of smartphones nowadays, one can easily create short-form videos for journalism or simply telling a story [15] Videos taken from a smartphone can already be edited within the phone itself or can be transferred to another device where other elements can be added. Compared to the previous decades where one needs expensive camera equipment and other high-end professional tools to come up with videos, certain technology available to instructors nowadays enables one to make simple or even complex-type video materials.

**Table 7. Video editing software previously used by the respondents for unspecified purposes**

	Frequency	Percentage
Adobe premier	1	3.03
Canva	2	6.06
Capcut	2	6.06
Filmora	1	3.03
Imovie	2	6.06
Vimeo	1	3.03
Kinemaster	2	6.06
Laptop video editor	1	3.03
Movie maker	2	6.06
Sony	1	3.03
OBS Studio	1	3.03
Power director	2	6.06
N/A	15	45.45

The table above describes the respondents' use of video editing software for any type of videos they have previously produced. It shows that there is no specific software application preferred across the respondents' selection. The emergence of various computer and mobile phone software has allowed video creators to use a multitude of software to be accessible to them, rather than be complicit with a prominent application delivered by large software companies. It can be noted that 15 or 45.45% have not been familiarized with any of these.

**Table 8. Equipment Availability to Respondent for Video Production**

	Frequency	Percentage
DSLR/Mirrorless Camera with Video Functionality	6	18.18%
Laptop or Desktop with Video Functionality	6	18.18%
Smartphone with Video Functionality, Laptop or Desktop Computer with Video Camera	21	63.63%

Table 8 presents the equipment available for the faculty respondents for video production. Most respondents (21 or 63.63%) answered that they have smartphones and desktop computers with video cameras. Only 6 or 18.18% have a dedicated camera specifically for video such as a DSLR or mirrorless camera, while 6 or 18.8% declared they only have a laptop or desktop for video. Given these numbers, video production is possible given the capacity of smartphones to be used in making instructional videos as most respondents have responded they have access to such equipment. Collaboration to make instructional materials is possible and can even have

a positive impact on the instructors themselves as described by a study made [16] wherein engagement to the material was observed.

#### **D. Obstacles Expressed by Faculty for training on video production for instruction**

About half of the respondents (17 or 51%) expressed that they would not have any challenges or issues in training for video production in instruction. Some have a positive attitude towards it given their insights such as “any training on audio-visual teaching materials production would be very helpful in our present flexible teaching-learning delivery modes” and “excited to undergo training and learn about video production.”

The other half shared these concerns:

Availability of gadgets and software. An underlying theme in video production is still the availability of equipment that can be used to carry out this intricate task. Even though one has a smartphone with video recording capabilities, editing the footage requires high specifications. Even with laptops or desktop computers, an entry-level computer may not handle post-production duties. Moreover, the software needed even for simple editing might require subscription fees or payment to be acquired by the end-user.

Terms used for video production. There is a concern about the concepts that need to be learned by one to be familiarized with video film-making. These fundamental terms are the stepping stones for one to understand simple camera work and how these translate to the other facets of video production. This issue shows that concepts on the topic of video production need to be familiarized first to the respondents initially for them to truly engage in hands-on training.

Time and Transportation concerns. The workload of the respondents as faculty members of the Department of Arts & Sciences might have been an issue for this theme to emerge. A faculty member undergoes several other trainings for their specialization, and other clerical tasks, on top of teaching and class preparation hours. With this, additional training for something as elaborate as video production should be addressed giving due consideration to their time availability. Moreover, the mobilization of the respondents emerged given the set-up of work from home and the pandemic situation is compromised.

## **DISCUSSION**

Faculty members must know the basic proficiency in operating a camera, execution of various camera shots and angles, and proficiency in using the camera's panning and tilt functions. Moreover, the concept of the exposure triangle should be emphasized to ensure proper lighting and exposure are achieved in the footage. When these are incorporated into video production, the resulting material will be more engaging and effective for the learners.

Twenty-three respondents know how to operate a camera or capture a video which is a basic proficiency needed.

In instructional videos, a producer will capture supporting footage of demonstrations of a certain process or procedure as best presented this way [2]; or simply record footage of the speaker's lecture in front of the camera. The instructor present in the video promotes social presence in distance learning [17], thus providing a more active role in learning compared to just presenting graphs or texts.

The majority of respondents have access to equipment that enables them to produce instructional videos. Fifteen (45.45%) agree and eight (24.24%) strongly agree with the statement that they have the technology to come up with such material. Given the capacity of smartphones nowadays, one can easily create short-form videos for journalism or tell a story [15]. Videos taken from a smartphone can already be edited within the phone itself or transferred to another device where other elements can be added. Compared to the previous decades where one needs expensive camera equipment and other high-end professional tools

to produce videos, certain technology available to instructors nowadays enables one to make simple or complex-type video materials.

DOAS Faculty members are willing to undergo training on audio-visual teaching materials which will be very helpful in conducting flexible learning.

## CONCLUSION

Regarding the respondents' technological proficiency, most are familiar with camera operation and executing various camera work such as shots, angles, and movements, while understanding camera exposure concepts has to be emphasized. Editing video footage using applicable software and adding helpful elements to increase viewer's understanding of the topic poses a challenge for the respondents.

There is little technological support as claimed by the respondents as training on making video materials are scarce although they have access to technology such as smartphones and computers with video functionality and have previously produced videos for instruction. Among the respondents' answers, there is no common or specific video editing application preferred.

Obstacles expressed by the respondents on training for video production for instruction include availability of gadgets and software, being familiar with video terminologies; and time and transportation concerns if the training will be conducted face to face.

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