Original Article

LCO-V: A Resource Material in Science Lessons to Facilitate Learning

Mary Rose Bautista Librada [1]*

1. Teacher, Cabuyao Integrated National High School, Cabuyao, Philippines.

* Correspondence: maryrose.bautista004@dedped.gov.ph

Abstract: The Department of the Education in the Philippines ensures the continuity of learning amid COVID 19 pandemic and introduced the DLDM as an alternative method in the new normal both in public and private schools. To continue education, distance learning was implemented globally, using various tools and technology available. DepEd also recognizes this as it issues a directive on Alternative Delivery Modes in order to minimize, or completely avoid face-to-face classes for the safety of children: MDL; ODL; TV Video/RBI; and BDL. This study aimed to know the level of effectivity of LCO-V as a resource material In Science lessons as perceived by the respondents in terms of: accessibility, comprehensibility, applicability and What the level of effectivity of LCO-V is in terms of: understanding the science topic, contextualizing and localizing science concept. LCO-V as resource material in terms of accessibility obtained a grand mean of 4.45. It as resource material obtained a grand mean of 4.23. As resource material in terms of applicability obtained a grand mean of 4.64 verbally interpreted as Strongly Agree. As resource material to facilitate learning in science lesson in terms of understanding the science topic obtained a grand mean of 4.37. As resource material to facilitate learning in science lesson in terms of contextualizing/localizing science topic obtained a grand mean of 4.36. As resource material to facilitate learning in science lesson in terms of providing alternative learning resource materials obtained a grand mean of 4.33. This means that it is accessible to the learners and V as resource material is comprehensible. It is applicable to the learners and LCO-V facilitates learning in understanding the science topic as perceived by the learners. Learners appreciate a contextualized and localized lessons in discussing the topic and can be an alternative resource material to facilitate learning. It showed that there is a positive significant relationship between the effectivity of LCO-V as a resource material in science lessons and its effectivity to facilitate Learning.

Keywords: resource, material, science lessons, learning

1. INTRODUCTION

The COVID 19 pandemic gave a severe global impact on educational systems that lead to almost entirely closures of educational institutions. The Department of the Education in the Philippines ensures the continuity of learning amid COVID 19 pandemic and introduced the Distance Learning Delivery Modality (DLDM) as an alternative method in the new normal both in public and private schools. To continue education, distance learning was implemented globally, using various tools and technology available [1]. DepEd also recognizes this as it issues a directive on Alternative Delivery Modes in order to minimize, or completely avoid face-to-face classes for the safety of children [2]: Modular Distance Learning (MDL); Online Distance Learning (ODL); TV-Video/Radio-based Instruction (TV Video/RBI); and Blended Distance Learning (BDL). Distance education is not a new teaching way. It was common in the late 1800s, but its rapid use started in the late 1990s with the breakthrough of the online revolution

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[3]. Distance education implies a teaching and learning processes which take place separately from each other. It means that there is a geographical and physical separation between a teacher and a student in both place and time. Learners acquire knowledge separated from their teachers [4]. Globally, distance learning was supported by e-learning and was found significantly effective for continuing teaching and learning during lockdown [4]. An author [5] provides a general definition by claiming that it is "learning supported and stimulated through the use of information and communication technologies". E-learning is to utilize any electronic technologies to access educational curriculum outside the traditional classroom. It is an implementation of electronic media for a variety of learning purposes to facilitate the delivery of distance education. However, a new term related to e-learning has emerged. Digitalization of education is more than simply using ICT in learning. Digitalization involves knowledge production and distribution through digital media, in the absence of physical classrooms [6]. Scholars still question whether explanatory videos correspond to modern strategies for imparting knowledge or whether the development of technologies creates challenges that have to be addressed and that have to be tested or further researched. Digitalization of education has its advantages. Research explains that exposure to digital media may lead to intellectual benefits. Students may create a mental space for learning, like a classroom is formed cognitively [7]. Digital media supports different types of cognition exploration. According to [8], communication tools such as digital media support in adopting cognitive functions by acting as partners in the zone of proximal development. Moreover, digitalization makes education customizable, portable and accessible because it can be in diverse formats such as slideshows, audios, videos, PDFs, e-mails, and word documents [9]. Teaching and learning materials can be easily shared, copied, and brought everywhere. Thus, students may acquire learning at their own comfort and requirements. It can be accessed at any time at the learner's own convenience [10]. Digitized education also provides clear, easy, gradual instructions for better understanding of the learners. It is often regarded as the most suitable way for self-learning [11]. As digitized education provides a wide range of materials for the learners, one of the most common medium used are explanatory videos. Videos are part of traditional classrooms, as well as the foundation of many online and blended lessons [12]. Several studies have provided evidence on how the use of videos have increased learners' critical thinking [13,14]. Due to the pandemic crisis, there has been a huge, disruptive shift from existing educational system to online education system. Certain challenges of online education include lack of online teaching skills in educators, insufficient pre-class study preparation, and inadequate discussion depth [15,16]. Inequalities faced by learners in implementation of online learning was also looked into. Learners sometimes do not have proper means to learn from the online medium, caused by lack of equipment and poor internet connection [17]. In a recent survey of incoming students in General Emilio Aguinaldo National High School data shows that out of 10, 380 learners, only 3,028 enrollees own a computer (laptop, desktop and tablet); 4,836 own a smartphone; and 3,174 own a TV (LED/LCD) with USB slot. In terms of internet connectivity, only 1,460 students have their own DSL, Broadband, Fiber, or Satellite connection at home; and 4,048 enrollees have Mobile Data connection. Therefore, majority of students have digital equipment, but only a few have connection to the internet and can afford online learning. Upon analysis, the school decided to implement both ODL and MDL, with majority of students choosing MDL. However, after the 1st Quarter, teachers observed that learners in the online modality have shifted to modular modality, which poses challenges on teaching and learning ICT. The Cabuyao Integrated National High School adapted the Modular Distance Learning (MDL) and the Online Distance Learning (ODL) as a learning scheme for the junior high school. Lack of interaction of the students with their teachers could also affect the learner's performance. Based on the results of some studies that focus on the teacher-learner interaction, teacher has a major role in the delivery of learning that contributes to the student's learning goals and satisfaction. The integration of videos to the lesson was used as an effective learning tool to assist in classroom teaching even many decades had been passed [18]. Some research studies revealed

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that video lessons have greater impact in the “Net” generations. Based on the recent study conducted by [19] entitled Assessing the Impact of Educational Video on Student Engagement, Critical Thinking and Learning: The Current State of Play results have shown that video lesson can contribute positively to both student’s confidence, motivation, and performance levels. In each of these ways, videos are already showing high levels of demonstrable impact in higher education. It is a huge challenge for the teachers dealing with the students under Modular Distance Learning in which the students are encouraged to adapt the independent learning. To address this problem a learning tool like video lessons can fill the learning gaps and can be used as supplemental learning material. It used a teaching tool entitled LCO-V or localized-contextualized Video: As a Resource Material in Teaching Science Lessons to Facilitate Learning. It helped the learners to cope up with the lesson through a 3-minute MELC-based video lesson that is explained and served as their learning guide. This resource material is accessible, comprehensible to facilitate learning.Specifically, this study aimed to know What is the level of effectivity of LCO-V as a resource material In Science lessons as perceived by the respondents in terms of: accessibility, comprehensibility ,applicability and What is the level of effectivity of LCO-V to facilitate learning in Science lessons as perceived by the respondents in terms of: understanding the science topic,contextualizing and localizing science concept and providing alternative learning resources. It introduced LCO-V as a Resource Material in Science Lessons to Facilitate Learning. It is a 3 minute-MELC based, localized, and contextualized science video lessons in which concepts are being taught in local settings of Cabuyao City to facilitate student’s learning. The study recorded the lesson in a local setting to discuss the topic. The video is uploaded through online platforms that is accessible to the learners. Questions were given to assess the learner’s gained knowledge from the video.

2. MATERIALS AND METHODS

The participants of the study will be select Grade 7 learners. There will be 250 students for the sample size. The study focused first with Grade 7 lessons and learners to determine the effect of the intervention introduced. It used a probability sampling. The respondents will be selected through random sampling technique where samples will meet the objective of the study. The respondents answered an online survey questionnaire to gather data for the study. This study used an online survey questionnaire in gathering the data needed in the study via google forms. A letter of request and permission to administer the tool to be used in the study will be handed to the proper authorities for approval. After securing the documents needed, the survey will be administered to the select respondents. The respondents are given enough time to answer the survey questionnaire before retrieval. The data collected from the answers from the respondents will be summarized, interpreted, and analyzed through various statistical tools to avoid bias on the result of the study. The study used a quantitative research design and a descriptive method of research. An author [20] characterized descriptive method of research as a fact-finding study with adequate and accurate interpretation of the findings. It describes with emphasis what exists such as current conditions, practices, situations or any occurrence. In order to obtain unbiased results from the research, the study LCO-V: A Resource Material in Science Lessons to Facilitate Learning used the following statistical tool in analyzing and reporting the data obtained from the respondents through the survey conducted. For research question number 1 to test the level of effectivity of LCO-V as a resource material In Science lessons as perceived by the respondents in terms of accessibility, comprehensibility, and impact to the learner’s, weighted mean is used.

$$\overline{x} = \frac{w_1x_1 + w_2x_2 + \ldots\ldots + w_nx_n}{w_1 + w_2 + \ldots\ldots w_n}$$

Where

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x is the repeating value
w is the number of occurrences of x weight
$\bar{x}$ is the weighted mean

To test the level of effectivity of LCO-V to facilitate learning in science lessons as perceived by the respondents in terms of answering Learner's Packet, gaining scientific knowledge, and applying knowledge in real life situation, weighted mean will be used.

$$\bar{x} = \frac{w_1x_1 + w_2x_2 + \ldots\ldots + w_nx_n}{w_1 + w_2 + \ldots\ldots w_n}$$

Where

x is the repeating value
w is the number of occurrences of x weight
$\bar{x}$ is the weighted mean

To test the significant relationship between the effectivity of LCO-V as a resource material in science lessons and its effectivity to facilitate learning as perceived by the respondents, Pearson-r will be used.

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

Where

r = Pearson correlation coefficient
x = Values in the first set of data
y = Values in the second set of data
n = Total number of values

3. RESULTS AND DISCUSSION

Table 01: LCO-V: As A Resource Material in Terms of Accessibility

Indicators	Weighted Mean	Verbal Interpretation
The video can be opened easily	4.19	Agree
The video can be played easily even using data.	4.33	Agree
The video is available anytime for viewing.	4.82	Strongly Agree
Grand Mean	4.45	Agree

The table 01 shows that LCO-V as resource material in terms of accessibility obtained a grand mean of 4.45 verbally interpreted as Agree. This means that LCO-V as resource material is accessible to the learners. Teaching and learning materials can be easily shared, copied, and brought everywhere. Thus, students may acquire learning at their own comfort and requirements. It can be accessed at any time at the learner's own convenience [21]. Moreover, digitalization makes education customizable, portable and accessible because it can be in diverse formats such as slideshows, audios, videos, PDFs, e-mails, and word documents [22].

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Table 02: LCO-V: As A Resource Material in Terms of Comprehensibility

Indicators	Weighted Mean	Verbal Interpretation
The video explained the topic clearly	4.23	Agree
The video defined science terms on the topic discussed	4.12	Agree
The video provided direct discussion about the science topic	4.34	Agree
Grand Mean	4.23	Agree

The table 02 shows that LCO-V as resource material in terms of comprehensibility obtained a grand mean of 4.23 verbally interpreted as Agree. This means that LCO-V as resource material is comprehensible to the learners.

Table 03: LCO-V: As A Resource Material in terms of Applicability

Indicators	Weighted Mean	Verbal Interpretation
The video is suitable to any type of distance learning (modular/online)	4.72	Strongly Agree
The video is appropriate to Grade 7 learners	4.64	Strongly Agree
The video is useful in the delivery of instructions	4.57	Strongly Agree
Grand Mean	4.64	Strongly Agree

The table 03 shows that LCO-V as resource material in terms of applicability obtained a grand mean of 4.64 verbally interpreted as Strongly Agree. This means that LCO-V as resource material is applicable to the learners. The integration of videos to the lesson was used as an effective learning tool to assist in classroom teaching even many decades had been passed [23]. Some research studies revealed that video lessons have greater impact in the “Net” generations. Based on the recent study conducted by [24] entitled Assessing the Impact of Educational Video on Student Engagement, Critical Thinking and Learning: The Current State of Play results have shown that video lesson can contribute positively to both student’s confidence, motivation, and performance levels.

Table 04: LCO-V: As A Resource Material to Facilitate Learning in Science Lesson in Terms of Understanding the Science Topic

Indicators	Weighted Mean	Verbal Interpretation
The video provided the key concept about the lesson	4.13	Agree
The video assisted in easily grasping the science topic	4.33	Agree
The video summarized the content of the lesson	4.65	Strongly Agree
Grand Mean	4.37	Agree

The table 04 shows that LCO-V as resource material to facilitate learning in science lesson in terms of understanding the science topic obtained a grand mean of 4.37 verbally interpreted as Agree. This means that using LCO-V facilitates learning in understanding the science topic as perceived by the

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learners. Teaching and learning materials can be easily shared, copied, and brought everywhere. Thus, students may acquire learning at their own comfort and requirements [25].

Table 05: LCO-V: As A Resource Material to Facilitate Learning in Science Lesson in Terms of Contextualizing/Localizing Science Topic

Indicators	Weighted Mean	Verbal Interpretation
The video provided real-life examples related to the topic	4.74	Strongly Agree
The video delivered the lesson using simple words	4.10	Agree
The video used outside classroom setting	4.23	Agree
Grand Mean	4.36	Agree

The table 05 shows that LCO-V as resource material to facilitate learning in science lesson in terms of contextualizing/localizing science topic obtained a grand mean of 4.36 verbally interpreted as Agree. This means that learners appreciate a contextualized and localized lessons in discussing the topic.

Table 06: LCO-V: As A Resource Material to Facilitate Learning in Science Lesson in Terms of Providing Alternative Learning Resource Materials

Indicators	Weighted Mean	Verbal Interpretation
The video can be watched repeatedly as needed	4.13	Agree
The video supported audio- visual concepts, models and processes that can be helpful in learning	4.27	Agree
The video presented information in creative ways (short but concise)	4.60	Strongly Agree
Grand mean	4.33	Agree

The table 06 shows that LCO-V as resource material to facilitate learning in science lesson in terms of providing alternative learning resource materials obtained a grand mean of 4.33 verbally interpreted as Agree. This means that LCO-V can be an alternative resource material to facilitate learning.

Table 07: Significant Relationship between the Effectivity of LCO-V as a Resource Material in Science

CO-V as a Resource Material	R-value	P-Value	Significance
Accessibility	0.44	.42	Significant
Comprehensibility	0.42	.41	Significant
Applicability	0.32	.42	Significant
LCO-V to Facilitate Learning			
Understanding the science topic	0.32	.48	Significant
Contextualizing and localizing science concepts.	0.46	.43	Significant

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Providing alternative learning resources	0.43	.41	Significant

The table 07 showed the significant relationship between the effectivity of LCO-V as a resource material in science lessons and its effectivity to facilitate Learning as perceived by the respondents obtained an average of +.40 P-Value showing the significant correlation. It showed that there is a positive significant relationship between the effectivity of LCO-V as a resource material in science lessons and its effectivity to facilitate Learning.

4. CONCLUSION

The prevalence of the use of video in higher education has increased exponentially over the past decade, and this trend is likely to continue in the future. The advancement of the "Net" generation of students through higher education, the advent of new teaching methods (and video's role in changing some of these), a changing university environment, the development of digital media, and greater knowledge on the benefits of video in higher education will certainly contribute to this ongoing development. Furthermore, studies have shown that they can contribute positively to both student confidence, motivation and performance levels. In each of these ways, videos are already showing high levels of demonstrable impact in higher education. LCO-V as resource material in terms of accessibility obtained a grand mean of 4.45 verbally interpreted as Agree. This means that LCO-V as resource material is accessible to the learners. LCO-V as resource material in terms of comprehensibility obtained a grand mean of 4.23 verbally interpreted as Agree. This means that LCO-V as resource material is comprehensible to the learners. LCO-V as resource material in terms of applicability obtained a grand mean of 4.64 verbally interpreted as Strongly Agree. This means that LCO-V as resource material is applicable to the learners. LCO-V as resource material to facilitate learning in science lesson in terms of understanding the science topic obtained a grand mean of 4.37 verbally interpreted as Agree. This means that using LCO-V facilitates learning in understanding the science topic as perceived by the learners that LCO-V as resource material to facilitate learning in science lesson in terms of contextualizing/localizing science topic obtained a grand mean of 4.36 verbally interpreted as Agree. This means that learners appreciate a contextualized and localized lessons in discussing the topic. LCO-V as resource material to facilitate learning in science lesson in terms of providing alternative learning resource materials obtained a grand mean of 4.33 verbally interpreted as Agree. This means that LCO-V can be an alternative resource material to facilitate learning. Significant relationship between the effectivity of LCO-V as a resource material in science lessons and its effectivity to facilitate Learning as perceived by the respondents obtained an average of +.40 P-Value showing the significant correlation. It showed that there is a positive significant relationship between the effectivity of LCO-V as a resource material in science lessons and its effectivity to facilitate Learning.

5. RECOMMENDATIONS

- Create more localized and contextualized videos that are accessible, comprehensible, and applicable to all learners.
- Design lessons that will facilitate learning to understand science topics, to contextualized and localized science concepts and to provide alternative learning resources.

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