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Development and Validation of Educational Video Tutorials for 21st Century Secondary Learners

Ava Clare Marie O. Robles
Ederlina M. Acedo
Mindanao State University
General Santos City Campus, Philippines

Abstract – *Amidst the proliferation of various technological advancements, achieving proficiency in solving problems that require higher thinking skills is still a common problem in public secondary schools. One of the platforms to address this needs is through the utilization of educational video tutorials that were validated correctly by experts before these were hand-me-down to the consumption of the public high school students. This study used the Research and Development (R and D) design. The skills included in the video tutorials were identified using the K-12 Curriculum Guide. The developed video tutorials underwent validations from forty-five (45) experts. Based on the evaluation ratings, the video tutorials were highly acceptable and highly relevant. Likewise, the videos were also considered as highly appropriate and usable. This finding showed that the developed videos were acceptable to a great extent. Hence, it can be concluded that these video materials were substantial, which may help improve students' computation skills. Therefore, the developed video tutorials may be used as instructional materials, remediation, and enhancement activities of the 21st teachers here or abroad.*

Keywords – curriculum guide, development, and validation, educational video tutorials

INTRODUCTION

In this technologically-driven environment, the integration of technology in the teaching-learning process provides teachers with great opportunity to enrich the skills of 21st-century learners. To cope with the educational trends, various universities here and abroad were hard-pressed to purchase software, computer programs, and other paraphernalia for the technology upgrade. Similarly, teachers are encouraged to develop instructional materials to meet the demands of time. In the Philippines, the Commission on Higher Education (CHED) prioritizes the development of the students' creative skills that will enrich their life-long skills. Requisite to this is the development of materials and other educational videos to serve as tools for learners to achieve mastery of the concepts and skills of various disciplines. As technology continues to dominate the educational system, it is vital that teachers innovate or develop materials such as videos to meet these challenges. Unfortunately, it is apparent that with the move of the K-12 curriculum, public schools in the Philippines have limited instructional materials that will meet the growing diverse learning needs of the millennials (Llagas et al., 2016). CHED has funded various projects to encourage teachers to develop innovative materials that will enhance the teaching-learning process. However, this initiative is not enough to deal with its current concerns. Provision for a more responsive solution is needed.

Currently, there is a mounting interest in validating educational videos for authentic learning due to the swelling production of videos available online. However, there is limited literature that discusses the appropriate tool to measure the validity of the developed video.

For this, the study Imperial, Jalique, and Robles (2016) highlighted that in the escalating dependence on technology, the development of educational materials such as comics or videos

may serve as a platform in meeting the changing needs of the students of this genre. Thus, leveraging the development and validation of innovative educational resources is a window of opportunity to advance the skills of the 21st century secondary learners. Likewise, this may offer teachers a responsive strategy to promote students' learning appropriate to their inclinations or needs.

OBJECTIVES OF THE STUDY

This study intends to address the abovementioned gaps or challenges. With this premise, the study aimed to develop and validate educational video tutorials, its applicability, and its effectiveness in addressing the learning needs of 21st-century learners. More importantly, this study is considered as an essential initiative since the utilization of such materials can increase students' engagement, enabling them to become active learners, eager to increase knowledge or skill acquisition they ought to master.

MATERIALS AND METHOD

Research and Development (R and D) design was utilized in this study. Figure 1 depicts the research flow and procedures. The outputs of this study were the educational video tutorials for Grades 7, 8, and 9 students. The input variables of this study were the competencies, which are incorporated in the K-12 Curriculum Guide.

Using the teacher's guide and curriculum guide, the forty-five (45) selected secondary Master Teachers assessed the content of the materials. The evaluators who assessed the content validity and applicability of videos came from seven (7) public schools. They were considered experts since most of them were teaching for more than six (6) years; and that some of them got the Master Teachers' item. After validating the video, they gave comments and suggestions for the improvement of the material.

The researchers identified the competencies following the K-12 Curriculum Guide. This learning material identifies the skills in reading comprehension developed among Grades 7, 8, and 9 students. For the validity of the video tutorials, the validation tool was utilized. After establishing the validity and reliability of the instrument, the level of the video's acceptability and applicability were determined. Likewise, Cronbach alpha was computed to guarantee that the instrument used was reliable.

The following procedures were done to the production of educational video tutorials.

1. Planning and Initial Assessment

In facilitating the collection of data, the researcher downloaded, reviewed, and identified whether the competencies in the K-12 Curriculum Guide were appropriately selected based on the needs of the students. Lesson plans

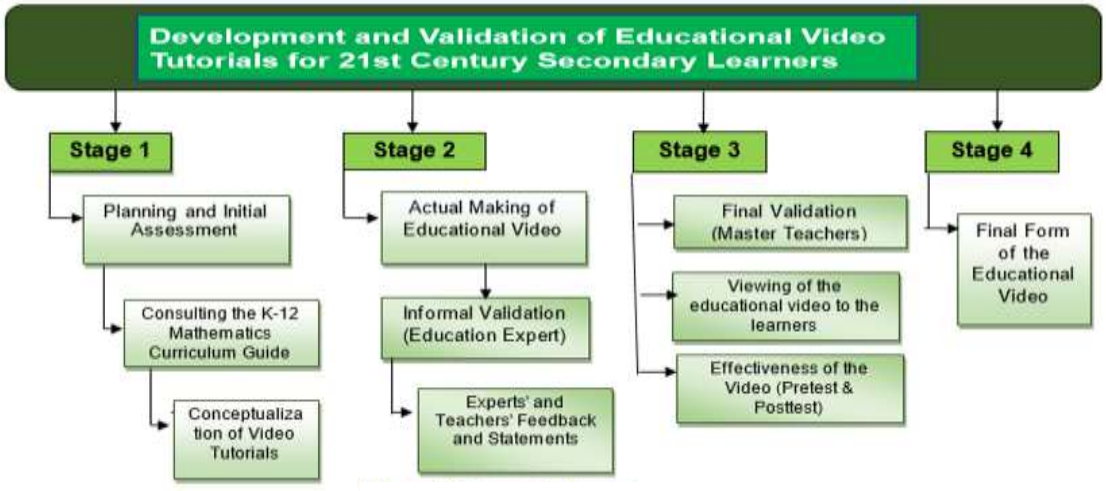

Figure 1. Research Design

and **scripts** were crafted to ensure that the produced videos follow the K-12 curriculum standards. At this phase, an Education professor expert checked the content of the lesson plan.

used for this was a validation tool borrowed from Robles (2016). The experts' comments and suggestions regarding the acceptability and relevance of the video tutorials were then considered. After this, determine the usability

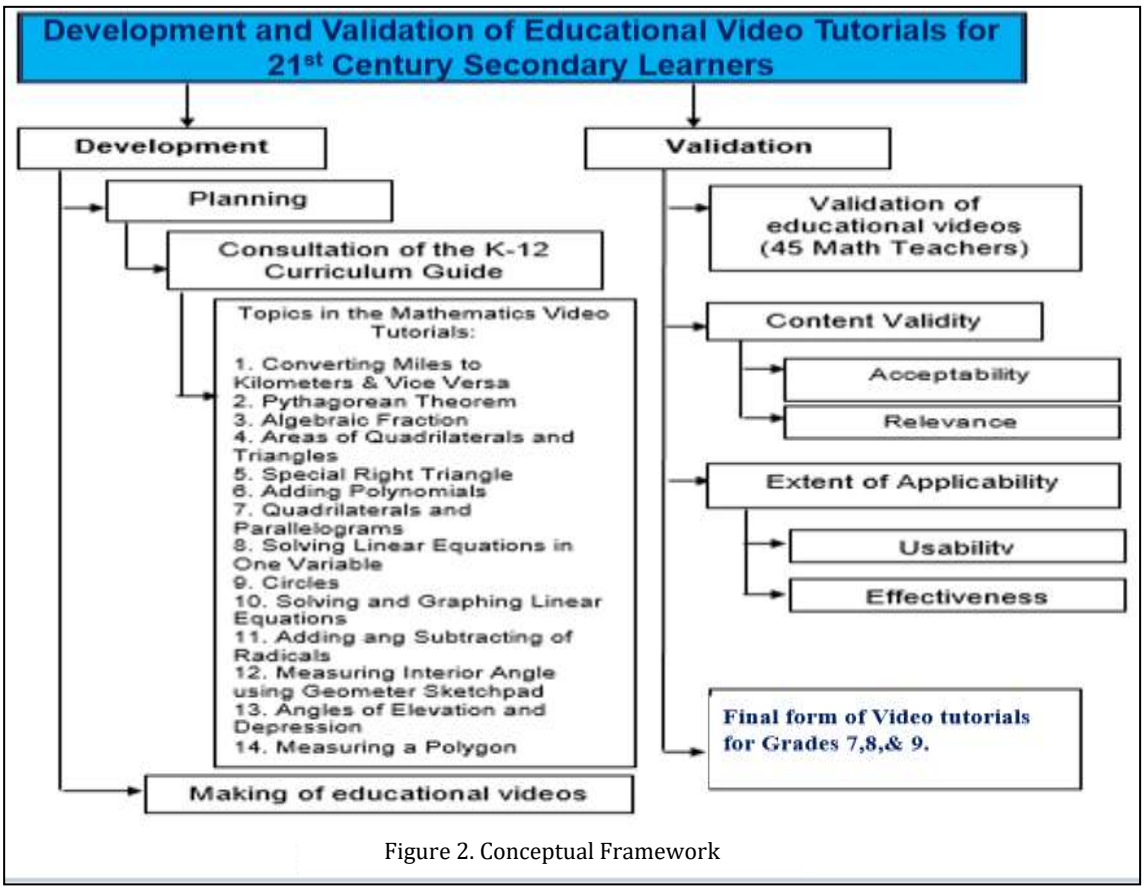

Figure 2. Conceptual Framework

2. **Actual Making of the Educational Video Tutorials**

After reviewing the K-12 Curriculum Guide and checking of lesson plans, the conduct of seminar-workshop on video production was done. All video production team attended this activity. All the required software was taught for them to produce quality educational videos for 21st-century learners. The development of videos started three days after the seminar-workshop. This is followed by the initial validation by the Education experts. At this level, the production team sought help from the 45 Master Teachers for the formal validation of the proposed video materials. The instrument

and appropriateness of the video tutorials.

3. **Final Validation of the Educational Video Tutorials**

The final validation of the video tutorials were done by Master Teachers. The videos were edited based from the suggestions and comments of the Master Teachers. The edited videos were then viewed by the learners for further validation.

4. Final Packaging

Taking into account the expert's suggestions, the video tutorials were revised.

The said revisions were done based on the comments and computed ratings of the experts. For this, the video's appropriateness, acceptability, relevance, usability, and appropriateness were determined. The final packing of the educational video tutorials was submitted to the Education professor expert for final viewing and evaluation. Out of sixteen (16) educational video tutorials, only one video tutorial was not considered.

Based on the results gathered, the researcher solved the weighted arithmetic mean, corresponding grand mean (per variable), and t-test for appropriate data analysis and interpretation. The video is considered valid if the average rating is at least 3.0. A five-point Likert scale with its equivalent verbal interpretation was used as follows: 1.00 – 1.49 for Least Extent; 1.5 – 2.49 for Less Extent; 2.5 – 3.49 for Moderate Extent; 3.5 – 4.49 for High Extent; and 4.5 – 5.00 for Very High Extent.

RESULTS AND DISCUSSION

Table 1 disclosed the evaluation results of the validity of educational video tutorials. In this study, validity is measured concerning acceptability and relevance. Results showed that among the indicators, "suitability of the explanations in the video tutorial on students' level of understanding" got the highest mean of 4.40. On the contrary, the lowest rating was on indicator 3. The main reason for this was the slight grammar issues found in the video tutorials.

Regarding relevance, it was found that the Master Teachers gave their highest rating on the relevant discussion of the videos, with a mean of 3.97. This indicates that the majority of them considered the videos as essential tools in supplementing relevant concepts that can complement the lesson of the teachers. However, the lowest rating was on the substantial discussion of the video tutorial (x = 3.83). This result specifies that there were video tutorials that need a more lengthy explanation to give a more precise discussion of the subject matter. One valid reason for this is time constraint since each video tutorial did not exceed 10minutes.

Table 1. Validation Result of Educational Video Tutorials

A. Acceptability Indicators (Cronbach alpha=.879)	WM	Des
1. The contents of the video are suitable since they provide systematic explanations which are aligned in the curriculum guide.	3.97	High
2. The explanations in the video tutorial are acceptable and suitable to students' level of understanding as it enhances students' 21st-century skills.	4.40	High
3. The concepts in the video tutorials are appropriately and accurately explained. They are free from grammatical errors.	3.75	High
4. The overall video tutorial captures the main objective and is acceptable to students with different learning styles.	3.97	High
5. Overall, the video tutorial is a creative approach that allows the viewer to understand vital concepts worth remembering.	3.91	High
Mean	4.0	High

Indicators	WM	Des
B. Relevance (Cronbach alpha=.874)		
1. The contents of the video are essential to students since they provide relevant discussions on the subject matter.	3.97	High
2. The video can be considered as an essential tool to achieve better retention of students' learning.	3.97	High
3. The video is relevant because it reinforces or supplements concepts necessary for mastery.	3.9	High
4. The overall discussion in the video tutorial provides a substantial explanation and gives an explicit discussion of the subject matter.	3.83	High
5. In general, the objective/s of the video tutorial is/are relevant and aligned with the skills and competencies in the curriculum guide.	3.93	High
Mean	3.92	High
Overall Mean	3.96	High

Generally, educational video tutorials were considered to be highly acceptable (x =4.00) and highly relevant (x=3.92). The grand mean rating of 3.96 disclosed that the contents of the developed video tutorials are highly valid and was commendable since the materials are highly acceptable and relevant. Likewise, it contained precise concepts in reference to the K-12 Curriculum Guide. This directly implies that the video tutorials possess valid and relevant knowledge that is accurately aligned with the K-12 curriculum guide, with objectives that are congruent and fitted to the skills of Grades 7, 8 and 9. Thus, it can be surmised that the evaluators consider the educational video tutorials to possess a great extent of validity.

This result is aligned with the claims of Kim, et al. (2014) and Prieto (2017) that any innovations utilized, whether in a module or video format must possess precise concepts which are acceptable, relevant and fitted to the levels of the students for them to attain validity.

Moreover, the extent of applicability in terms of usability and appropriateness of the educational video tutorials for 21st-century secondary learners were also evaluated. It can be gleaned from Table 2 the assessment results of these video tutorials. Regarding usability, they considered the video tutorials as innovations that can maximize students' learning (x = 4.0). They rated this as the highest indicator since they were convinced that educational video tutorials are beneficial in enhancing their students' 21st-century skills." This indicates that educational videos are useful in developing students' 21st-century skills. Nevertheless, the lowest rating was on indicator 1. The experts deliberated that the video tutorials serve as supplemental materials and not to serve purely as reinforcement.

With regards to the appropriateness of the video tutorials, data disclosed that the highest rating was on the overall indicator depicting the validity, relevance, and usefulness of the videos, with a mean of 4.20. This is supported by the comments of the evaluators that the videos reflect the application principle suitable to students' level. This indicates that majority of them rated the videos as an indispensable tool in complementing the teaching of the mentors since the developed educational video tutorials were found to be valid, appropriate, and useful to both students and teachers. On the contrary, the lowest rating was the video's potential in aiding students to develop their critical thinking skills. (x = 3.86). This result revealed that experts consider video tutorials to serve as innovations that address students' learning styles and multiple intelligences.

Generally, the educational video tutorials possess a "High" extent of applicability since they were rated as highly usable (x =3.88) and highly appropriate (x =3.97), with a grand

mean rating of 3.92 described as "High." This finding implies that educational video tutorials are highly useful for retention and useful in expediting students' learning process.

Table 2. Evaluation of the Video Tutorials' Extent of Applicability

Indicators	WM	Des
A. Usability (Cronbach alpha=.881)		
1. The video is an innovative material used to reinforce students' learning.	3.62	High
2. The video tutorial may be used to maximize students' learning, beneficial in enhancing their 21st-century skills.	4.00	High
3. The content of the video may be used as a tool in helping the viewers understand a series of concepts worth remembering.	3.90	High
4. The message of the video is comprehensive and is useful to enhance students' learning.	3.95	High
5. The video tutorial is suitable for students' learning styles and preferences. Hence, it is helpful to both students and teachers.	3.91	High
Mean	3.88	High
B. Appropriateness (Cronbach alpha=.807)		
1. The contents of the video will help students understand better their current lesson.	3.97	High
2. The video is appropriate that aids the students in developing their critical thinking skills.	3.86	High
3. The video presented is a useful supplementary material for reinforcement and application of new learning.	3.91	High
4. The overall quality of the video presented is effective and free from grammatical errors.	3.92	High
5. As a whole, the video is considered valid, effective, relevant, and useful to both students and teachers.	4.20	High
Mean	3.97	High
Overall Mean	3.92	High

Based on the overall results, it can be inferred that the evaluators considered the videos as potential innovative tools that can assist both teachers and students in improving the teaching-learning process. Furthermore, this finding may be attributed due to the increase in students' engagement after viewing the videos. The abovementioned results adhere to the study of Cruse (2006) and Guo et al. (2014) that videos are globally useful resources in enhancing the 21st-century skills of the students. He further emphasized that video production affects student engagement.

After one semester, the researcher conducted a follow-up study to determine the effectiveness of the said videos statistically. Table 3 shows the result.

Following the .05 level of confidence, the result of the t-test presented in Table 3 shows that no statistically significant difference exists in the performance of the pretest (t=0.507, p=0.612) and posttest (t=1.232, p=0.616) of the control group. On the contrary, a significant difference was only found during the posttest (t=1.892, p=0.038) of the experimental group. This means that though there is a significant increase in the level of performance of those students exposed to educational video tutorials. The modest increase in their result may be attributed to the increased attention, and retention on the part of the students, enabling them to be more productive and engaged. This result affirms the findings of Llagas et al. (2016) that the millennial teaching that utilizes video in

the teaching-learning process tends to produce more productive students thereby attributing to the improvement of the learners' performance.

Table 3. Comparison of Pretest and Posttest Performance of Experimental & Control Group

	Control	Experimental
Pretest	0.505	0.284
	(0.612)	(0.777)
Posttest	1.232	1.891
	(0.615)	(0.039)*

* significant

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CONCLUSION AND RECOMMENDATION

Based on the findings, the researchers gave the following conclusions:

1. The educational video tutorials attained a great extent of validity. The experts evaluated educational videos as highly acceptable and highly relevant. This implies that the content of the educational video tutorials is highly valid.

2. As rated by the Master teachers, the video tutorials possessed a high extent of applicability since the developed videos were highly usable and highly appropriate. This implies that the videos are highly useful in enhancing the 21st-century skills of the students at the same time, increase students' retention. Furthermore, it can be inferred that the developed videos were appropriate to assist both the teachers and students in improving the teaching-learning process.

3. There is a significant difference in the mean scores gained between the control and experimental group. Using t-test, it was found that the experimental group performed significantly better than the control group. This indicates that the video tutorials seen by the experimental group are effective in increasing the performance of the students.

From the findings and conclusions of the study, the following recommendations were given:

1. The educational video tutorials can be used as supplemental tools to enhance students' understanding of the subject or topic; since they were proven to be very highly acceptable and

relevant in enhancing students' learning and 21st-century skills.

2. The presentation of developed videos should have a longer timeframe so that more questions can be given that will enhance students' higher-order thinking skills (HOTS).

3. Future researchers are encouraged to develop more educational video tutorials in other Grade levels. This is to provide teachers various instructional materials needed in improving the level of understanding and skills of their students.

4. The enhanced educational video tutorials may be submitted to the concerned Division Supervisor of the Department of Education Division Office of GenSan for endorsement.

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