

## Development of the 21st Century Skills through Educational Video Clips

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**Abstract:** This study investigated on how well the students can explain science concepts through movie scene clips as a summative assessment. It focused on the depth of the concepts learned in physics, chemistry, and earth and life science, and to the 21st century skills developed by the students while combining the scene clips and reviewing the concepts observed from the scenes. Ninety seven students from three different schools in Luzon, Philippines during the first semester of school year 2017-2018 were selected to participate: grade 12 students under the Science, Technology, Engineering, and Mathematics strand enrolled in General Physics 1 from Pamantasan ng Lungsod ng Maynila, second year college students enrolled in General Chemistry from Bataan Peninsula State University and grade 11 students under the General Academic Strand enrolled in Earth and Life Science from Isaac Lopez Integrated School in Mandaluyong City. Students grouped in 4-5 members were required to choose a film and clip the scenes which have applications and violations of science concepts observed from the scenes. The outcomes were then presented in class. The result reveals a 3.1 mean in the students' mastery of the concepts in physics, 3.0 mean in chemistry, and 3.2 in earth and life science, with 4.0 as the basis of an excellent mark. This shows that the mastery of the concepts learned in each subject falls under the proficient category. The study has also found support in the development of the students' 21st century skills, which are creativity, teamwork, communication, critical thinking, digital competencies, leadership, and planning.

**Keywords:** Video clips, Education, 21st century skills, Contextualization

### Introduction

The recent convergence of video and computer technologies presents new opportunities and challenges in education. (Kearney and Schuck, 2006). Video clips embedded in multimedia presentations can be used to improve learning in college courses (Berk, R. A., 2009). This can also be used in the 21st century generation of students since computer technology is a must-have for them. Educators in a number of disciplines have discussed the value of feature films as resources in innovative teaching, including counselor education (Higgins & Dermer, 2001), English as a Second Language (Kasper, 1999), social and personality development (Boyatzis, 2009; Kirsh, 1998), and medicine (Crellin & Briones, 1995). Scherer and Baker (1999), who used film as a core component of an organizational theory course, noted that "film provides a familiar attention-capturing visual medium to engage the student and encourage retention" (p. 143). Showing video clips from popular feature films, animated films, and television shows is a very effective teaching and learning technique. Studies in the broader social sciences have empirically demonstrated that using film clips increases students' interest and enjoyment in their courses as well as their understanding and integration of course concepts (Kirsh, 1998; Toman & Rak, 2000).

Constructivism is the guiding philosophical perspective used in this study. The constructivist approach to teaching and learning has been highlighted in research and in practice in numerous educational contexts (Hamlin, 1992; Myers & Dyer, 2006; Phipps, Osborne, Dyer, & Ball, 2008; Schunk, 2004). Schunk stated, "...the rise of constructivism has been theory and research in human development, especially the theories of Piaget and Vygotsky" (p. 285). Piaget's Theory of Cognitive Development and Vygotsky's Sociocultural Theory combined to form the theoretical basis for the study form a constructivist philosophical perspective. This is also our basis of enhancing the development of the students' 21st century skills.

## 21st Century Skills

According to Barnett Berry (as cited in Education Week, 2010) 21st century learning “means that students master content while producing, synthesizing, and evaluating information from a wide variety of subjects and sources with an understanding and respect for diverse cultures” (p. 32) in addition to the three C’s: creativity, collaboration, and communication. Ruetters (2013) identified 21st century competencies as global awareness; digital competencies; critical thinking; collaboration; cross-cultural; communication; and problem solving. The current group of students we have today are generally group-oriented and social. They like to be in control and they do not want to just sit in a classroom and listen to lectures. They like options, so a project-based learning is appropriate for them. To effectively engage and teach these students, a learning strategy must be designed to promote a collaborative learner-centered environment to which students will relate and respond. Since they are practice users of digital technology, a student-developed movie scene clips is the best idea to make them work collaboratively and creatively.

This study aims to investigate on how well 21st century students can explain science concepts through movie scene clips as a summative assessment. It will give emphasis on the depth of the concepts learned in physics, chemistry, and earth and life science and on the 21st century skills developed by the students while combining the scene clips and reviewing the concepts observed from the scenes. Specifically, it aims to answer the following questions:

1. What is the frequency of the concepts observed per group in physics, chemistry and earth and life science, and how would it relate to the depth of concepts learned?
2. What is the extent of frequency on students’ misconception in the subjects?
3. To what extent does the students’ output enhanced the 21st century skills of the learners?
4. Is there a significant relationship between the science concepts learned and science skills developed by the students?

## Methodology

### Participants

Respondents of this study are students of Luzon, Philippines. This comprises ninety-seven (97) students: forty two (42) grade 12 students under the Science, Technology, Engineering, and Mathematics (STEM) strand enrolled in general physics 1 from Pamantasan ng Lungsod ng Maynila (PLM), twenty-eight (28) grade 11 students under the Accountancy, Business, and Management (ABM) strand enrolled in earth and life science from Isaac Lopez Integrated School in Mandaluyong City (ILIS), and twenty seven (27) second year college students enrolled in chemistry from Bataan Peninsula State University (BPSU). The participating schools and the samples were purposively selected by the researchers.

### Instrument and Research Design

This study is qualitative and quantitative in nature. Purposive structured interview were drawn from the students to confirm if their 21st century skills were developed and enhanced, and to verify the contextualization of science concepts in this study. Observers were requested for their reflective insights and suggestions to support and strengthen the reliability of the learning tool. Assessment rubric developed by the researchers was used for group output to assess the students’ works. This measured the learners’ ability to demonstrate in–depth analysis of knowledge, skills, work habits, and character traits commonly associated with the 21st century skills such as planning, adaptability, initiative, leadership, teamwork, collaboration, cooperation, critical thinking, reasoning, analysis, curiosity, listening, self-discipline, and self-direction, research skills and practices, scientific literacy, information and communication technology (ICT) literacy, media and internet literacy, interpretation and analysis, and oral presentation. The general result of the rubric followed the following format:

Value	Interpretation	Equivalent Grade
3.6-4.0	Advanced	90-100%
3.1-3.5	Proficient	85-89%
2.6-3.0	Approaching Proficiency	80-84%
2.1-2.5	Developing	75-79%
1.6-2.0	Beginning	70-74%
1.0-1.5	Needs Support	69%

Each student was then given a structured interview concerning the following questions:

1. What are your reasons for choosing the film to be analyzed?
2. What are your reasons for selecting the scenes to be clipped?
3. How did you arrive to integrate your decision to select the scene as an application and/violation of the science concept?
4. How did you relate the analyze scenes to real life situations?

For data processing and statistical treatment, Pearson correlation was employed. Statistical results were computed and analyzed using the data analysis tool pack of the IBM SPSS Statistics version 23.

## **Procedure**

### *Physics*

One intact class in Grade 12 under the STEM strand enrolled in physics 1 from PLM were divided into eight groups consisting five to six (5-6) members. They were given ten (10) days to choose a movie and make a review – one movie to review per group. The review contains selected scenes which they think have applications and violations of physics laws. A total of seven action films and one Filipino TV series were reviewed. These were Xmen: Apocalypse, Superman 2, Fast and Furious 8, Assassin's Creed, Xxx: Return of Xander Cage, The Borne Legacy, and Deadpool. The lone Filipino TV series reviewed was Alyas Robinhood. The selected scenes were clipped and combined to create a student-developed digital output. The students were required to present the output orally in class. Each of the members of the group was tasked to talk and express their views/analysis of the physics concepts as observed from the scenes. A group written output was also required to be submitted. Three (3) science faculty were invited to observe the students' presentation of the output. They used the rubric developed by the researchers as a basis in grading the output.

### *Chemistry*

One intact class with twenty seven (27) students enrolled in chemistry at Bataan Peninsula University (BPU) worked in three (3) groups of seven (7) and one (1) group of six (6) two to five members. The students were not given any instruction on the use of the movie maker and any editing technology. Each group were required to choose a movie to review and select scenes from the said movie that have applications of science concepts and those scenes which violate science concepts. Each selected scenes were clipped and combined to create a semi-developed movie. The students presented their works in class. Two science faculty were also invited to observe and grade the students' output.

### *Earth and Life Science*

Twenty eight (28) Grade 11 students enrolled in Earth and Life Science were divided into five (5) groups. Each group was assigned a leader who is the top academic performing students. Prior to grouping, Earth science concepts such as the universe, earth structure, earthquake, weathering and erosion were discussed in class. They were then required to choose a movie to review and select scenes with applications and violations of earth science concepts. The scenes were then clipped to create a semi-developed movie. Two science faculty were also invited to assess the students' output.

## **Results and Discussion**

### **Physics**

Table 1 shows the summary of the students' output of the grade 12 STEM students enrolled in physics. This is the average grade as assessed by the invited observers and the researchers based on the rubric for the students' output (see appendix). The result reveals a 3.25 mean in the students' mastery of the concepts learned which falls under the proficient category. The result also confirms that the students demonstrated a deep understanding of the science concepts as reflected in column 3- the statement of science concepts, from which a 3.9 mean was divulged. All of the students except group 8 reviewed more than 5 science concepts. This implies that on the average, the students had observed a significant number of physics concepts applied on the movie clips.

Table 1. Summary of Student Outputs in Physics

Group number	Mastery of the content	Statement of science concepts	Number of science concepts reviewed	Duration of the overall movie scene clips	Delivery and presentation	Average score	Equivalent grade	Number of misconception stated
1	3.00	2.0	4.0	4.0	3.0	3.2	Proficient	2
2	2.70	2.0	4.0	3.0	2.7	2.88	Proficient	1
3	3.00	3.0	4.0	4.0	4.0	3.6	Advanced	0
4	4.00	3.0	4.0	3.0	4.0	3.6	Advanced	0
5	3.70	4.0	4.0	3.0	4.0	3.7	Advanced	0
6	3.33	4.0	4.0	4.0	4.0	3.8	Advanced	0
7	3.33	3.0	4.0	3.0	4.0	3.4	Proficient	0
8	3.00	4.0	3.0	3.0	4.0	3.4	Proficient	0
Mean	3.25	3.1	3.9	3.4	3.7	3.45	Proficient	

However, a few misconceptions were noticed from groups 1 and 2. Although a few misconceptions were demonstrated, this has no significant effect on the depth of the concepts learned. This is revealed on Table 2 where a correlation between the number of concepts reviewed and the statement of science concepts was made. The result shows that there is no significant difference between the number of concepts reviewed and the way students stated the science concepts, with a p-value of  $0.299 > \alpha = 0.05$ . Moreover, students have shown their creativity in presenting the output orally as reflected in column 6 – delivery and presentation, which garnered a mean of 3.7. In general, the students exhibited a remarkable display of skills which is depicted from the overall mean of the presentation outcomes which is 3.45 and falls under the proficient category.

Table 2. Correlation between Number of Concepts Reviewed and Statement of Science Concepts

Variables	Correlation coefficient	N	Sig Value
Number of concepts reviewed*Statement of science concepts	-0.421	8	0.299

In Table 3, the concepts observed by each group are given. The most frequently observed concept is inertia and the least is energy. All of the groups observed the application of inertia in the scenes but the depth of their statement of concepts vary (see column 2 of Table 1). Groups 5, 6, and 8 explained the concepts with profound insights.

Table 3. Physics Concepts Observed

Concepts	Group number							
	1	2	3	4	5	6	7	8
Inertia	✓	✓	✓	✓	✓	✓	✓	✓
Acceleration	✓		✓	✓	✓	✓	✓	✓
Action and reaction		✓	✓		✓	✓	✓	✓
Projectile motion	✓	✓	✓	✓	✓	✓	✓	
Friction	✓					✓		
Circular motion	✓		✓			✓		
Free fall	✓	✓	✓	✓		✓		
Energy		✓						
Gravity				✓		✓	✓	
Unbalanced force				✓	✓	✓	✓	✓
Equilibrium		✓	✓		✓			

Sample of unedited students’ responses to structured interview questions:

1. *What are your reasons for choosing the film to be analyzed?* The responses of the students revealed their eagerness to see scenes in the movies where physics laws are applied. In this part of the process, students are developing their critical thinking skills. They chose the film which they think they could observe applications of physics:

*“It is the best film we think that does not contain supernatural powers so we can see if laws of physics were applied or violated.”*

*“It is an exciting movie that is full of actions where we can observe many applications of physics laws.”*

*“It has extreme stunts that seem to question the laws of physics.”*

*“The movie seems interesting and we were excited see if physics laws were applied.”*

2. *Justify your reasons for selecting the scenes to be clipped.* The word “we” as used by the students in their responses is an evident proof of students’ collaboration. Critical thinking is also developed in deciding what scenes to clip. They carefully analyzed the clip and tried to connect it to their understanding of the concepts learned:

*“Based on our understanding of physics laws, we classify the scenes as applications or violations of physics laws. From there, we select the best scenes.”*

*“We decided to select a particular scene based on the lessons discussed by our professor.”*

*“From what we learned during class discussions, we were able to determine whether the scenes are applications or violations of physics laws and then we decide what scenes to clip.”*

*“We analyzed the clip then we tried to connect it to our lesson.”*

3. *How did you arrive to integrate your decision to select the scene as an application and/violation of the science concept?* The responses obviously display a great confirmation of collaboration. The brainstorming they did was an indication of a very good relationship developed among members of the group. They also practiced good communication skills by engaging in group conversations in order to come up with carefully scrutinized clips. The process of choosing scenes depicts their unique creativity on how to select the best scenes and how they carefully clipped those scenes to create the best output:

*“We had a group discussion so all of us can give opinion and share what we know so we can describe whether the chosen clip is a violation or an application of physics law.”*

*“We watched the film together and reviewed the scenes carefully.”*

*“Our judgment was based on what was taught and what we learned. We integrated these principles to the clips whether it was an application or a violation of physics laws.”*

*“We watched the movie together, carefully looking for scenes where physics laws were either applied or violated then we listed all those scenes down, and together with their specific time markers, we chopped it down to specific scenes.”*

4. *How did you relate the analyzed scenes to real life situation?* Students tried to relate the reviewed scenes to their life. They realized that the concepts learned are applied in real life situations whether consciously or not. Some even practiced to critique movies they watched. They realized they do physics every day:

*“I realized that in everything that we do in life physics laws are part of it.”*

*“In real life we unconsciously do applications of physics on a daily basis like as simple as opening or closing a door. It is everywhere and we are doing it every day.”*

*“I can relate the analyzed scenes to real life by giving critique to movies I watch. Before, I don’t give deep attention to every action in the movie but now I know the application of science on it. I now effectively critique movies.”*

*“I never really thought of applying physics in every movie I watch until this project was made.”*

*“Most scenes from the movie we reviewed were unrealistic and we know it can’t be done in real life.”*

Responses from informal interview of invited science observers:

*“I like the learning method. I think it is better to highlight the scenes like drawing a circle around the car, or a person so that the attention of the viewer is focused on the object being described.”*

*“This is a good method in assessing the students’ conceptual learning. A pre- and post-test can be used to test the improvement of the concepts learned.”*

## Chemistry

With respect to the result of the assessment as to enhancing the developed 21st century skills of the students based from the classroom experience with the task of doing a movie analysis through movie clipping, the students can now explain or experience course subject content first hand since there was the actual engagement as an approach not only to science concepts but to the know – how of digitalization. Table 4 unveils the result of the activity based from the developed rubrics of the researcher. Since the purpose of the study is aimed at investigating on how well 21st century students can explain science concepts through movie scene clip, it actually magnified the depth not only of the concepts learned in chemistry but their know – how as regards to digital technology as well. Concerning the structured questions for the students, Table 5, 6, and 7 were given to present how they see through the task given to them. The tables also show knowledge, skills, work habits, and character traits commonly associated with the 21st century skills (Edglossary, 2019).

Table 4. Summary of the Result of the Assessment in Chemistry

Criteria	Group 1	Group 2	Group 3	Group 4
Mastery of the Content	4	3	4	3
Statement of Science Concept	3	3	3	3
Number of Science Concept Reviewed	3	3	3	3
Duration of Movie Clips	3	3	3	2
Delivery and Presentation	3	3	4	3
Rate/Grade	3.2	3.0	3.4	2.8
	Proficient	Approaching Proficiency	Proficient	Approaching Proficiency

Table 5. Result of the Structured Questions and the Movie Analysed (Group 1)

Survey Questions	Title of Movie Analyzed: Sorcerer's Apprentice	Associated 21 <sup>st</sup> Century Skills
1. What are your reasons for choosing the film to be analyzed?	One member recommended the movie and as soon as we learned the story, we all agreed to have it reviewed.	teamwork, collaboration, cooperation, initiative
2. Justify your reasons for selecting the scenes to be clipped.	We thought that the selected scenes will be appropriate to give emphasis on the science concepts.	analysis, curiosity, critical thinking
3. How did you arrive to integrate your decision to select the scene as an application and/violation of the science concept?	Our leader instructed us to identify parts of the movie which will present applications and violations of the science concepts.	leadership, research skills, interpretation and analysis
4. How did you relate the analyzed scenes to real life situations?	Violations are more than the applications of the science concepts considering that the movie is a sci-fi, but in relation to real life situations, friendship, true love, discipline, responsibility, and hard work pays off when one is determined.	contextualization, reflection/analysis

Table 6. Result of the Structured Questions and the Movie Analyzed (Group 2)

Survey Questions	Title of Movie Analyzed: The Island	Associated 21 <sup>st</sup> Century Skills
1. What are your reasons for choosing the film to be analyzed?	The leader recommended the movie since it was film shown during her third year high school at St. John Academy by her science teacher. She thought it will catch the interest of the other members.	Leadership, teamwork, collaboration, cooperation,
2. Justify your reasons for selecting the scenes to be clipped.	Our leader told us to watch the film and look for the science concepts. We were also told to identify scenes which are impossible to happen and reason out. After one week, we were directed by our leader to meet after classes so we can finalize the scenes that we have selected.	Initiative, reasoning. Self-discipline, analysis, self-direction, planning, reasoning, critical thinking
3. How did you arrive to integrate your decision to select the scene as an application and/violation of the science concept?	We decided by justifying the scenes that we can clip.	Critical thinking, research skills
4. How did you relate the analyzed scenes to real life situations?	Applications like medical advances, routine laboratory tests, nanotechnology, these are all applications in medicine and researches; and were observed in the film. In breakthrough, may lead to eradication of deadly diseases.	Research skills and practices, breakthrough, contextualization

Table 7. Result of the Structured Questions and the Movie Analyzed (Group 3)

Survey Questions	Title of Movie Analyzed: Harry Potter and the Half – Blood Prince	Associated 21 <sup>st</sup> Century Skills
1. What are your reasons for choosing the film to be analyzed?	The film was suggested by one of our teachers so what we did was to check and had the movie marathon to monitor the story of Harry Potter.	Curiosity, self-direction
2. Justify your reasons for selecting the scenes to be clipped.	The half – blood prince, as the part 7 of the Harry Potter series presented so much about mixtures, and potions, and elixirs. So we decided to have it analyzed.	Research skills, curiosity, critical thinking
3. How did you arrive to integrate your decision to select the scene as an application and/violation of the science concept?	We were asked by our leader to suggest scenes that we can identify as correct or misleading to reality. From there, we decided on how many scenes to include and what to discard.	Cooperation, teamwork, critical thinking
4. How did you relate the analyzed scenes to real life situations?	Young love, blooming relationships, friendships, discipline, creativity, curiosity, solutions, and mixtures, problem solving, sacrifice, hardships, humility, pain, making right decisions and even death were among the things we have observed from the movie. It brings out hope to our stressed out reality.	Contextualization to real life scenario

Table 8. Result of the Structured Questions and the Movie Analyzed (Group 4)

Survey Questions	Title of Movie Analyzed: Underdog	Associated 21 <sup>st</sup> Century Skills
1. What are your reasons for choosing the film to be analyzed?	It was unanimously agreed by all the members of the group since most have dogs as pets.	Cooperation, teamwork
2. Justify your reasons for selecting the scenes to be clipped.	We focused more with the violations since it was a sci-fi movie.	Research skills, critical thinking
3. How did you arrive to integrate your decision to select the scene as an application and/violation of the science concept?	All of us agreed on the scenes that we clipped.	Teamwork, collaboration, cooperation
4. How did you relate the analyzed scenes to real life situations?	During our meetings, we came up with how many of us have a dog as pets. From there, we kind of relate as to the feeling of Jack, the boy who kept the beagle underdog. Friendship and loyalty were developed as well as concern. There was also advancement of technology such as computer generated imagery (CGI), and it was a comedy sci-fi movie so knowing Filipinos who are known to be happy people, this movie is well appreciated.	Information and communication technology (ICT) literacy, media and internet literacy, interpretation

The statements below are comments given by the students which were constructed before the students reviewed each other's work. Seeing from the outside, it is very transparent that the students have engaged themselves as to the given task. The comments are the following:

1. *It was a fun and a good experience but challenging.*
2. *I like the idea but many of us do not have internet connections at home. I did my part in internet café with other classmates without internet at home.*
3. *I found the project to be enjoyable and educational.*
4. *The movie clipping project was definitely a great learning experience*
5. *The project was fun and enabled us to be creative.*
6. *It allowed us to put what we learned in class on a real project.*
7. *It was fun to do and gave me an opportunity to be with other classmates who were not my barkada.*

8. *It was definitely useful to at least see how the process works.*
9. *It was a fun way to spend class.*
10. *It's difficult but I had a great group.*
11. *Very relevant and kind of fun. Puts you at ease with classmates.*
12. *I really enjoyed the project....it was pretty fun, I enjoyed my experience.*
13. *I enjoyed creating our project, because it is more than memorizing terms, it's using creativity*
14. *I thought it was fun and gave us a chance to be creative. It was only hard when we research for a movie to review.*
15. *It was relevant and enjoyable.*
16. *I though the project was fun, unique and educational but it was more time consuming especially when editing.*

The results of the survey indicated that students enjoyed creating the task with the group mates; they thought the experience was both important and useful and enjoyed the project from the point of view of the researcher; this is not surprising because the respondents are Millennial and it is their nature to grab at challenges for a new experience. Another, technology is something that they can easily in sync with. To confirm the enhancement of the developed 21st century skills through video clips, the researcher invited two (2) authorities to observe and critique by giving their insights and suggestions to further strengthen the output of the students. The following were the consolidated insights from observers:

1. *Clips picked from the movies clearly illustrated chemistry concepts.*
2. *Each member was able to deliver assigned task.*
3. *Questions from the class were addressed properly.*
4. *Some oral presenters seem to be nervous due to the presence of the observers.*
5. *Cooperation among the members of the group was evident.*
6. *Recommends the activity to other disciplines.*
7. *Created movie clips can enhance learning content*
8. *Is time given enough to plan and collaborate?*
9. *Class size is very ideal.*
10. *There were no observed barriers between the members.*
11. *There was the eagerness to participate.*
12. *Very significant experience for the students.*
13. *Mixed emotions of enthusiasm and shyness were observed during the presentation.*

The results between and among the members of each groups were consistent. Overall, students well received the task and thought value in terms of learning, importance, usefulness and entertainment. The insights of the invited observers serve as baseline to the enhancement of the developed 21st century skills of the students.

### Earth and Life Science

As seen in Table 9, all the groups got 3.0 on the number of concepts reviewed which falls under approaching proficiency category. Group 5 got 4.0, as the highest score in the statement of science concept. Groups 1, 2, 3, and 4 have 3.0 rate and a mean of 2.6 in the mastery of the content, which again falls on the approaching proficiency category.

Table 9. Results of Students' Output on Earth and Life Science

Criteria	Group 1	Group 2	Group 3	Group 4	Group 5	Mean
Mastery of Content	3.0	2.0	2.0	3.0	3.0	2.6
Statement of Science Concept	3.0	3.0	3.0	3.0	4.0	3.2
Number of Science Concepts Reviewed	3.0	3.0	3.0	3.0	3.0	3.0
Duration of Movie Clips	3.0	3.0	4.0	4.0	3.0	3.4
Delivery and Presentation	3.0	2.0	2.0	3.0	4.0	2.8
Rate	3.0	2.6	2.8	3.2	3.4	3.0
Grade	84%	80%	82%	86%	88%	84%
Equivalent Grade	Approaching Proficiency	Approaching Proficiency	Approaching Proficiency	Proficient	Proficient	Approaching Proficiency

Groups 1, 2, 3 and 4 of a 3.0 rate had slightly stated misconception; group 5 of 4.0 rate had expressed an in-depth analysis of the earth science concepts. A mean of 2.8 was attained in the delivery and presentations. As a whole, the students had a rate of 3.0 for the presentation of the output which falls on the approaching proficiency category.

Random sample of students' responses on the structured interview questionnaire.

1. *What are your reasons for choosing the film?* Two out of five groups stated that they chose a film of their common interest. One group has a copy of a film about earth disasters and they agreed to choose the film to review. They said that the scenes were breath-taking and that this ignites their interest in reviewing the said film.

2. *What are your reasons for selecting the clips?* Some students say that there were many scenes similar to the "Big One" (a hypothetical earthquake with a magnitude greater than what is expected), and that they wanted to be aware of the safety tips before, during, and after earthquake.

3. *How did you arrive to integrate your decision to select the scene as an application and/violation of the science concept?* All of the students said that they talked and agreed what scenes to clip. They also selected scenes which they believe has applications or violations of the concepts they learned from the class discussion.

## **Conclusion**

In general, this study has found support of enhancing the development of the students' 21st century skills as supported by the following results resolving the research questions. Based on the results shown, students' 21st century skills were developed and enhanced to the fullest. Their critical thinking skills were developed on the very first step of the process – the choosing of film fit for the project. They intelligently choose the film which they think has many applications of science concepts. At the same time, collaboration among the members of the group was also developed. The word "we" as reflected on the responses is an obvious proof of collaborative efforts in choosing the best film to review. The groups' brainstorming in selecting the film and in clipping the scenes is good indication of harmonious relationship among the members of the group. In deciding what scenes to clip, critical thinking is developed. They integrate their decision to the concepts learned from the classroom discussion.

Moreover, communication skills were developed during the presentation of the output in class. Every member of the group was tasked to deliver an output. Furthermore, students have shown their exemplary creative skills in the result of the film clips. The 21st century students, being technology savvy, produced a very creative digital output of the clips. It is therefore, very flattering that the students did not comply for mere compliance and it is indeed very transparent that the result can justify the fact that the developed 21st century skills of the students were further enhanced by the actualization of the task assigned to them. In addition, students have an opportunity to bond with fellow students outside of the classroom in a more meaningful and profound manner. With respect to the result of the assessment as to developing the 21st century skills of the students based from the classroom experience with the task of doing a movie analysis through movie clipping, the students can now explain or experience course subject content first hand since there was the actual engagement as an approach not only to science concepts but to the know – how of digital technology.

In addition to current limitation of the study, future research may consider changes to the study design. Peer evaluation may be included to enhance students' judgment skills. Results of the peer evaluation may be discussed among them, and because students speak the same "language," they have a tendency to listen and take feedback from their peers. In addition, as the paper has challenging issues, the researchers recommend for its integration of a blended learning strategy, wide disseminations on the different field of discipline and continuous implementation on the science concepts for the 21st century learners' skills.

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