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# The Effect of Video-based Collaborative Learning among Economics' Undergraduates in Malaysia

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***Abstract***

*This study reports on the effect of video-based collaborative learning in the teaching of economics among undergraduates in Malaysia. This study is undertaken to compare the video-based collaborative learning plus hands-on method and conventional collaborative method in promoting students' performance and teamwork skills. This study employed the quasi experimental with pretest-posttest control group design. A total of 90 students was taken as samples. The samples were divided into Video-based Collaborative Learning plus Hands-on (VBCLH) group and Conventional Collaborative (CC) group. The analysis showed that the VBCLH group outperformed in performance and teamwork skill. The students' hand-on experiences and making the video that related with the economics topics with composing their own lyrics with economics term are the innovations of this method. They can learn through experience and enjoy the lesson. Video-based learning has gained the attention since the classroom setting emphasizes on blended learning.*

***Keywords:*** *video based collaborative, economics, undergraduates, teamwork skills, performance*

## Introduction

The advent of the 21st century has brought about technology advancement in various sectors. As a result, this trend has a great change in the education institutions especially in the higher education institutions (Inoue, 2010).The communication technologies (ICTs) have been integrated in teaching activities to develop new learning environments (Exposito, Sanchez-Rivas, Gomez-Calero & Pablo-Romero, 2020). Educators and students are no longer bound by time and space. This issue is pertinent as a lecturer is always the key person enriching and developing suitable online learning materials (Kautsar, Kunota, Musashi&Sugitari, 2016).

As universities and schools gravitate towards online learning, the educators should select appropriate pedagogy for helping students develop their online learning skills especially collaborative online learning. Collaborative online learning is one of the popular strategy that focusing on students centred learning. Students centred learning becomes the learning trend in modern education and emphasised in Malaysian Education Blueprint (Borhan, Saleh, Li & Ong, 2020). When students work together in structural, collaborative group, they discuss and gain experience in cognitive development as compared to students who work alone (Chiriac, 2014). Assigning students in groups has become a key factor to enhance their social skill and teamwork skill. Strong teamwork skill can be developed and incorporated in the collaborative online assignment.

Video serves as an audiovisual learning medium that offers real world examples with rich contextual detail (Colasante& Douglas, 2016). Researchers believe that the use of videos in class was a success especially in illustrating concepts, therefore using videos is found to be an effective teaching method. Video-based learning is recognised as a powerful online learning resource in teaching activities (Ahmed Mohamed, Fahmy Yousef, Mohamed Amine Chatti&Schroeder, 2014). While video-based learning may not be a new phenomenon, it has started to become momentous in the blended learning environment recently in Malaysia. Even though MOOCs in education have been implemented by several top higher education in the world for about a decade ago. However, it was only been implemented in Malaysia as a pilot study in 2013 (Mansor, Latifah & Amina, 2015). A group of researcher also found that the use of technologies for example video still lagging in economics courses (Exposito, Sanchez-Rivas, Gomez-Calero & Pablo-Romero, 2020).Therefore, developing videos related to students' daily life and economics' conceptsthat can help improve students' teamwork skills

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in collaborative setting has become a pressing need. The educational video with the economics concepts and Malaysia culture as background was a research gap in this study.
On the other hand, prior research has shown (Abdel Meguid& Collins, 2017) that undergraduate learning can be problematic particularly with respect to large classes, students' participation, limited teaching time and lecturers' attitude. A common problem was limited opportunities for students' participation during discussion as there was a tendency for the lecturer to tell them the answers instead of allowing students to develop their own answers (Svinicki &McKeachie, 2014). Most of the lecturers thought that they were great instructors and they had limited time in one day due to heavy work load. Therefore, to tell the students' the answer was the fastest way to complete their task. However, the lecturers did not realize that they had duplicated and implemented the pedagogy from the traditional teaching in the online collaborative learning environment. Hence, students' do not have chance to learn an appropriate teamwork skills. Sometimes, the tendency of "free rider" also always occurs in the collaborative setting. Therefore, an effective online collaborative learning approach needs to be implemented in the lectures.
The main objective of this study is to explore video-based learning in the teaching of economics. This study was undertaken to compare Video-based Collaborative Learning plus Hands-on (VBCLH) group and Conventional Collaborative (CC) group in promoting students' performance and teamwork skills.

## Literature Review

This study has its conceptual foundations in Mayer's Multimedia Learning (2014).Mayer's Multimedia Learning Theory (2014) indicated "people learn more deeply from words and picture than from words alone". In other words, a picture can tell a thousand words. However, Mayer's theory also indicated that the brain does not interpret a multimedia presentation of picture unless these elements are organized to relate with the students' prior knowledge. For this study, students were exposed to new information during the video watching and discussion in a collaborative context. They were asked to resolve key ideas between their prior understanding of old information and new information provided by group members. Students shared their ideas and helped peers to achieve a productive learning zone through the hands-on activities. The lecturer played an important role as the facilitator in assisting and explaining to students. Therefore, social interaction among members is central in the students' acquisition of new knowledge (Vygotsky, 1997).

### *Video-based Learning*

Video serves as an audio visual learning medium that offers real world examples with rich contextual detail (Isik& Yilmaz, 2012). Using video as a pedagogical tool is a fruitful way of engaging students in collaborative learning. It also has the potential to foster a way of thinking about the world through the discussions conducted(Higgins &Moeed, 2017). Prior research on instructional videos of effective culturally responsive teaching, in this manner, highlight best practices and provide a way for schools to post an 'early win' in their work in addressing achievement gaps (Jordan, 2017; Fullam, 2017). In other words, video-based learning can enhance the academic's achievement of the students.
Flipped classroom with video-based learning has received much attention because it assists in achieving the learning outcomes and enhances students' learning interest (Kurihara, 2016). Video-based learning that is implemented in the flipped classroom also enhances students' active participation in the collaborative learning (Shih & Tsai, 2017). Some studies have shown that collaborative learning (Biggs & Tang, 2007; Saad, 2020) improve the quality of learning (Lou, Abrami& d' Apollonia, 2001; Ramsden, 1992; Jaakko, &Veli-Matti, 2018) especially with video (Hussin, Ahmad & Hamzah, 2019). For instance, researchers found that students who learned collaboratively performed better in their studies ( Springer,Stanne& Donovan, 1999).
Researchers believed that when students designed the video, they were reformulated their knowledge (Harel 1990, Hayers, 1996; Zahn, et. al., 2014) and express to the audients. When designing a video, students apply economics concepts and theories to lyrics and integrated with the picture interactively. Students can express their own understanding of the economics concepts or thesis. They can also related their peers' opinions though developing the video.

### *Collaborative Learning*

A group of students between four and seven who form a group for collaboration is called collaborative (Rangachari, 1996; Woods, 1996). Zulfiqar, Zhou, Aswi& Yasin (2019) reviews collaborative methods that influence the academic performance of students. Findings show that students who perform well in sixth grade economics are students who are always in the process of learning. According to the study of Sweet and Michaelsen (2012), there is a positive and significant correlation between group work and teamwork.

Hmelo and Ferrari (1997) make comparisons between learning in a collaborative and traditional way. A synthesis of the reviews of the works shows that students who learn collaborative methods are better able to understand the content and concepts of economics. Albanese and Mitchell (1993) conclude that problem solving methods are better integrated with knowledge than traditional methods. According to Moore (1998), students who take part in collaborative learning and find that they enjoy collaborative discussions.

## Methodology

This study employed the quasi experimental research with pretest-posttest control group design. This design was selected because the researchers needed to explore the effect of using technology in the teaching (Kirk, 2013).90 students from one of the education public university in Malaysia participated in this study. In another word, all the samples are the pre-service teachers in Malaysia. They will serve as economics teachers in high school after their graduation. Two groups were involved in this study, namely the experimental group (VBCLH) and control group (CC). Each group served as the comparison for the other. Each group consisted of 45 students. Random sampling was selected according to the group basic in order not to interrupt the students' class schedule. The Video-based Collaborative Learning plus Hands-on method group (experimental group) received the video clip weekly and discussed in a group setting of online forum. At the end of the intervention, the students needed to submit a video based on the lecturer's instruction. To illustrate, the students had to modify a song and fill in the lyrics with economics concepts or they had to edit or develop a short movie that relate to the economics syllabus. For example, they used the rhythm of the song "Trouble is a friend" by Lenkaand filled in the lyrics for basic economic problem, students need to prepare the video and shooting the Malaysia culture and economics activities as video background. The Conventional Collaborative group which served as the control group only discussed the tutorial topics face-to-face without any video clips provided. The intervention took 8 weeks to complete and involved four subtopics.

The internal and external threats like maturation, instrumentation, and selection of the group were controlled. As a rule of thumb, any uncontrolled threats would affect the validity of the experiment. A pilot test was run to examine the reliability of the questionnaire and the Conbrach's Alpha showed .984. The value above .70 showed a reliable standard(Sekeran& Bougie, 2010). In other words, all the items were reliable and acceptable. Two experts from economics education were assigned to establish the content validity of the questionnaires.

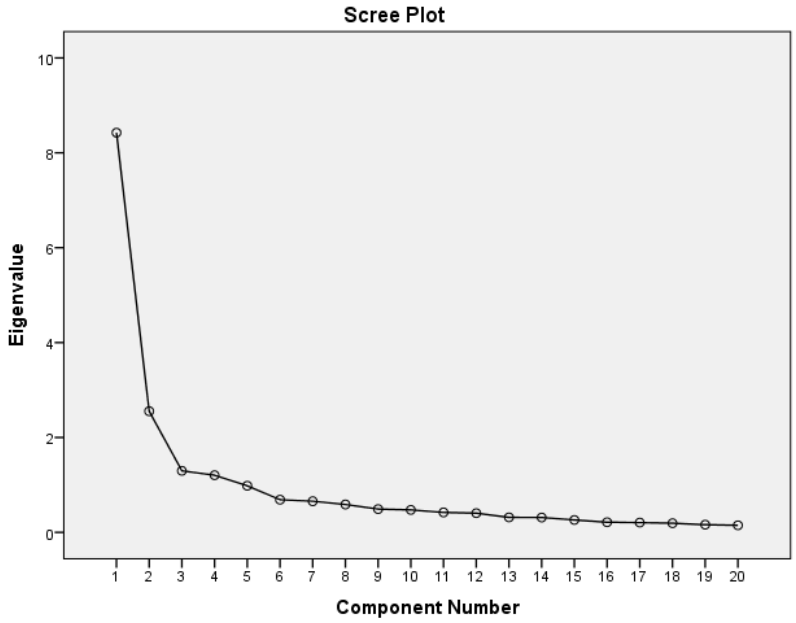
## Findings

Prior to the analysis, the researchers have checked the model assumptions and found out that all the data were normally distributed. The residual plot of normality and homogeneity of variance assumption were checked too. KMO and Bartlett's Test indicated the value .881. Since the value is greater than .70, it indicated sufficient items for each factor.

Principle components analysis with varimax rotation was conducted to assess how three 'Teamwork" variables clustered. These variables were collaboration between peers, communication in the team, and enhance new skills. Referring to the scree plot (Graph 1), it indicated that only two components had differences between the eigenvalues decline. In other words, these two factors were rotated, based on the eigenvalues over 1. After rotation, the first component which was collaboration between peers accounted for 42.12% of the variance and the second component which was communication in the team accounted 12.77% of the variance. Table 1 displays the items and component loading for the rotated components, with loading less than .25 omitted to improve clarity.

Table 1: Component Loadings for the Rotated Components (N=90)

| Item | Component Loading | | Communality |
|---|---|---|---|
| | 1 | 2 | |
| The Video-based learning…..<br>facilitated collaboration between peers. | | .736 | .674 |
| helped me to achieve the learningresults proposed for this course. | .772 | | .693 |
| develop more effective communication skills. | | .564 | .675 |
| communicating with my peers | .447 | | .749 |
| inreased my motivation to learn. | .815 | | .617 |
| experience of working in collaborative group. | .643 | .333 | .657 |
| reduce the sense of isolation in the team. | .267 | .664 | .764 |
| interact with other students in this course. | | .294 | .683 |
| more confident in using the course discussion board. | .577 | .383 | .709 |
| grading criteria for the group work was clear enough. | .813 | | .641 |
| communicated with other peers from the group. | .592 | .516 | .629 |
| communicate better with other students about the learning topics, content and activities. | .599 | .481 | .662 |
| develop collaborative problem solving skills | | .747 | .642 |
| develop new content knowledge from peers | .758 | | .524 |
| Overall, I am satisfied with my video-based learning experience in the course. | .588 | .413 | .654 |
| % of variance | 42.12 | 12.77 | |




Graph 1: Scree Plot

Table 2: The Analysis of Video-Based Learning

| ANCOVA Effect | Type III Sum of Squares | Mean Square | F | df | Sig |
|---|---|---|---|---|---|
| Corrected model | 2085.463 | 1042.731 | 5.509 | df=2,87 | .006* |
| Performance | | 784.963 | | | .045* |
| Group | | 1394.824 | | | .008* |

*Significant at $p < .05$

The findings showed a significant result of F-value ($F = 5.509$, $p = .006$) in the corrected model. After implementing the Video-based Collaborative Learning plus Hands-on, the students' performance showed a significant result with mean square 784.963 ($p = .045$) and between group mean square 1394.824 ($p = .008$).

A comparison between grades has done in Table 3. A total of 45 students in each group was analysis according to their economics' performance assessment. The students' grade in VBCLH and CC group was similar. However, the students in VBCLH were outperformed in post test compared with CC group. They had a total of 12 students score A, 28 score B and five students score C respectively; whereas, the CC group only got eight students score A, 22 students score B and 15 students got C.

Table 3: Comparison between Grade

| Grade | Pre test | | Post test | |
|---|---|---|---|---|
| | Experimental group (VBCLH) | Control group (CC) | Experimental group (VBCLH) | Control group (CC) |
| A | 1 | 1 | 12 | 8 |
| B | 6 | 7 | 28 | 22 |
| C | 16 | 17 | 5 | 15 |
| D | 22 | 20 | 0 | 0 |

| | | | | |
|---|---|---|---|---|
| Total | 45 | 45 | 45 | 45 |

Table 4 shows the further analysis of the students in the VBCLH group and CC group towards teamwork. Respondents answered each item using a 5-point Likert scale with 5 anchors (1-strongly disagree, 3-neutral and 5-strongly agree).

Table 4: Analysis for teamwork towards video–based learning

| Item No. | Pre test | | Post test | |
|---|---|---|---|---|
| | Experimental group (VBCLH) | Control group (CC) | Experimental group (VBCLH) | Control group (CC) |
| 1. Video-based learning facilitated collaboration between peers. | 3.5510 | 3.5000 | 3.4400 | 3.2000 |
| 2. Video-based learning encouraged teamwork among peers. | 3.5714 | 3.5750 | 3.4400 | 3.3000 |
| 3. Video-based learning facilitated a better way of learning compared with other learning methods. | 3.4286 | 3.2750 | 3.6000 | 3.2250 |
| 4. The videos presented have helped me to achieve the learning results proposed for this course. | 3.4082 | 3.4500 | 3.5800 | 3.4750 |
| 5. The videos stimulated new ideas for discussion. | 3.6939 | 3.6000 | 3.6000 | 3.5000 |
| 6. More effective communication skills was developed through video-based learning. | 3.4082 | 3.5000 | 3.5000 | 3.3750 |
| 7. Communicating with my team members helped me understand what we were supposed to do in the team project. | 3.7959 | 3.7250 | 3.6400 | 3.7000 |
| 8. Interacting with my team members increased my motivation to learn. | 3.8367 | 3.8000 | 3.8200 | 3.8250 |
| 9. A good experience of working in collaborative group with my team members. | 3.7959 | 3.5750 | 3.7400 | 3.6750 |

| | | | | |
|---|---|---|---|---|
| 10. The learning helped to reduce the sense of isolation in the team. | 3.6531 | 3.5500 | 3.6400 | 3.5750 |
| 11. A good interaction with other students in this course. | 3.8571 | 3.6000 | 3.6400 | 3.5500 |
| 12. More confident in using video-based learningduring the discussion. | 3.6939 | 3.6500 | 3.6600 | 3.6000 |
| 13. Grading criteria for the group work was clear enough. | 3.6735 | 3.4500 | 3.5400 | 3.4750 |
| 14. I communicated with other peers from the group through video-based leanring. | 3.6531 | 3.4750 | 3.4800 | 3.2250 |
| 15. I communicated better through video-based learningabout the topics, content and activities. | 3.7347 | 3.5750 | 3.7600 | 3.7250 |
| 16. I was able to develop collaborative problem solving skills through video-based learning. | 3.3265 | 3.5750 | 3.5600 | 3.3250 |
| 17. I was able to develop new content knowledge from peers through video-based learning, | 3.6327 | 3.4250 | 3.5600 | 3.5500 |
| 18. Video-based learning enhance collaborative learning was effective. | 3.5714 | 3.4000 | 3.5000 | 3.3500 |
| 19. Collaborative learning with video was time-consuming. | 3.4694 | 3.1500 | 3.4600 | 3.4500 |
| 20. Overall, I am satisfied with my video-based learning experiencein the course. | 3.4694 | 3.5000 | 3.7800 | 2.6000 |

The analysis in the pretest for VBCLH and CC were similar. The VBCLH group outperformed almost all the items in the posttest except items 7 and 8. The lower results came from "Communicating with my team members helped me understand" with the mean score of 3.64 and "Interacting with my team members increased my motivation" with the mean score of 3.82, whereas theCC group showed the higher mean of3.70 and 3.825 respectively for these two items due to the conventional face-to-face

discussion that they had. For the last item related to the overall experience of video learning, the experimental group showed a very significant result of 3.78 mean score.As conclusion, it showed that video-based learning was effective. On the other hand, the lowest mean score is the negative item, "Collaborative learning through video-based learning in my course was time consuming" with the mean score of only 3.46. The average mean score for VBCLH experimental posttest group was 3.779, whereas for CC group was 3.411.

## Discussion

The effect of video-based collaborative learning showed significant results on students' performance and teamwork skills in the VBCLH group as compared to the CC group. The students in the VBCLH group not only outperformed in the video learning but also gained hand-on experience in making video that were related to the topics. In addition, they could share their thoughts and ideas while discussing how to present the concepts in the short videos. The videos making not only can enhance the students' innovative and critical thinking (Yang & Wu, 2012; Khan, 2016),but also make the lessons more interactive and lively. The students' hand-on experiences and making the video that related with the economics topics with composing their own lyrics with economics term are the innovations of this method. They can learn through experience and enjoy the lesson. Video-based learning has gained the attention since the classroom setting emphasizes on blended learning. On the other hand, all the students are pre-service teachers, the learning experience that they gained can be contributed in their future teaching in term of pedagogical content.

Video-based learning embedded with the technology is a good learning platform in a world that abundance of learning possibilities, the demand of the economics graduates justifies the need for more advance and effective teaching methods. Thus, teachers in schools can apply the recommended approach that in line with Education 4.0.

## Conclusion

The video-based collaborative learning was only carried out among economics undergraduates in Malaysia in the present study. This study has concluded that the video-based collaborative learning has showed positive and significant results in students' performance and teamwork skills. Video based collaborative learning gives learners the opportunity to visualise the real world situations which make the students easier to understand the concepts. This is a useful learning tool that bringing abstract theories into concretes as well as illustrate the real daily activities. Those teaching and learning method that embedded with digital technology such as blended learning can promote learning (Yeop, Yaakub, Wong &Zon, 2019; Wong, Abdullah &Abas, 2019). Despite the strength of the significant results of this study, it has its limitations due to the quasi-experimental design, the sample size is small. A further study of video-based collaborative learning will focus on students' attitude towards video-based learning among Malaysia and oversea students.

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