

# PROPOSAL FOR A LESSON PLAN TO CREATE A VIDEO OF STUDENTS EXPLAINING A MATH PROBLEM THAT THEY MADE

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## 1. Introduction

The purpose of this study is to propose a lesson plan that encompasses the merits of individual learning and small-group cooperative learning and deepens students' understanding of the content of the study unit, in order to inherit the merits of the activity of creating mathematical problems that has continued since the Taisho era (around 1920s) in Japan, and to develop 21st-century skills.

The novelty of this research lies in the fact that students themselves can create explanatory videos using an iPad application (Explain Edu) and evaluate their own and others' work. A lesson plan will be proposed based on the analysis of the questionnaire survey obtained from 12 practice sessions in junior and senior high schools from 2015 to 2020.

## 3. Results & Discussion

We defined three kinds of evaluation for "good explanation videos"

1. Students can show correct answers to questions, clear explanations, and easy-to-understand visual explanations using figures or graphs as appropriate.
2. Students can speak clearly and audibly to appropriate for the audience's understanding.
3. Students effectively can explain with a laser pointer or other devices helps viewers understand the explanation and important points, and GeoGebra or Desmos is used to help the viewer understand the explanation.

a rubric evaluation based on the six perspectives

Text	Sound	Answer
Explanation	Idea	Value

References  
 Ikeuchi, F. (1934). Trends and Innovations in Arithmetic Education. Meiji Library, Tokyo.  
 Kanamori, C., Shimizu, K. (2021). A study of the effect of the activity of "making a problem to make an explanation movie" in high school mathematics vector. Proceedings of the Japan Society for Educational Technology, 2021 Spring National Conference

## 2. Method

There are 5 advantages of making a video to explain a problem created by a student

1. Realizes "independent, interactive and deep learning"
2. Repair and reconstruct what they have learned and deepen their understanding through language activities
3. Foster students' creativity and deepen their understanding of the learning content through repeated trial and error
4. Provide students with more opportunities to think about the problems and explanations in this way
5. Evaluate our own videos and those of others, enabling us to revise their videos and reflect on them based on objective evaluation



## 4. Conclusion

We Propose a lesson plan that was easy for anyone to follow and that clearly indicated points to keep in mind.

