

# Re-purposing Technology Lesson Plan

Margaret Timmis

TE 831

## Summary Box

**Lesson title:** Congruent shapes and Translations in a coordinate plane.

**Prepared by:** Margaret Timmis

**Subject area:** Mathematics

**Technology used:** Nearpod

**Length of lesson:** 50 minute class period

**Suggested grade level:** 6-8

## **Lesson Objectives:** *The student will be able to*

*I can* explain how two geometric figures are congruent when you can rotate, reflect, or **translate** the first to obtain the second.

*I can* specifically name the rotation, reflection, or **translation** of one geometric figure necessary to obtain the second congruent figure.

*I can* explain the effect of a dilation, **translation**, rotation, and reflection on a figure on a coordinate plane using new coordinates to describe the result of the action.

## **Student NETS Standards Alignment:**

**ISTE 2b:** Communicate information and ideas effectively to multiple audiences using a variety of media and formats

**ISTE 1a:** Apply existing knowledge to generate new ideas, products, or processes

## **Materials:**

Students will need:

- Chromebook
- Pen/Pencil
- Notebook
- Calculator

## **Lesson Procedure:**

***Beginning-*** Students will go to the website for [Nearpod](#). From here I will have a code displayed on the board for students to input to the website. The students will be writing their full name so that their answers are recorded for each of them individually throughout the lesson. Once they have logged in then the presentation will load to their screen.

**\*\*** *In the teacher setting you can make it either student paced or teacher paced. Student paced allows students to move freely through the presentation. Teacher paced gives me the only one to be able to move from each slide. This keeps students on track and focused on what I am presenting at hand.* **\*\***

- Login to Nearpod

- Number Talk - We always start the class off with a number talk. The number talk for the day is on [“Which one doesn’t belong?”](#) We completed the first one on the web page.

**Middle-**

- Begin lesson by Introducing the term **Congruent** and give the definition. Students will be writing this in their notebook. After we talk about what the term means I will have a one question quiz asking students if the two shapes presented are congruent. Students will submit their answers and then we will discuss the correct answer.
- After students are introduced to the term Congruent we will start talking about how to name congruent shapes and how to recognize and name congruent sides and angles. This will be done in a slide where students can copy down the information.
  - Students will then be given a shape and asked to draw on the chromebook (using their touchscreen) the congruent sides and angles. These answers will be displayed (nameless) to compare work of different students and discuss which images are correct and why and also do the same for some answers that were incorrect.
- We will also talk about how translate different figures in a coordinate plane.
  - Students will be given a definition and image to represent a translation that they will copy down in their notebook.
  - On the next slide, students will then look at a shape that is translated in a coordinate plane and talk about the points and how they changed. Students will be given a collaborative question stating, “How did the translation affect the points depending on the direction?” I want them to discuss this question through this tool without using any verbal communication only written. Answers display in real time allowing them to have open conversation about the different ideas that arise. Once the conversation has died down then we will discuss the ideas they formed and talk about whether they are correct or incorrect.
  - Students will then be given the general formula to find the new coordinate points without using a coordinate plane. Students will then be given practice problems on another slide to complete in their notebook which we will then go over together as a class.
  - We will then apply the translation through a coordinate plane for students to practice as well. Students will then be given an interactive question where they are given a coordinate plane and they need to graph the image and then translate the image given the translations. This will appear in real time on the main screen, (nameless) for us as a class to look at and talk about what images are portraying the correct information and what images are maybe incorrect and why so that we can clear up any misconceptions.

**End:** Before students begin their assignment they will be completing a 3 question quiz over the material presented. This will show me who has got it and who still needs some extra assistance. With the extra time I will pull those students review concepts with them that they are still struggling with from the day. Students will end with a link to an assignment, Translating points without the graph: <https://www.mathworksheets4kids.com/transformation/translation/coordinates1.pdf> . Students will complete the assignment on a piece of notebook paper and turn it in when completed. This is also linked in their schoology account if they do not complete the assignment during class. Students will also be given a physical assignment, so that they can practice completing the translations in a coordinate plane. <https://www.mathworksheets4kids.com/transformation/translation/shapes1.pdf>

**Additional Resources:**

<https://www.mathworksheets4kids.com/transformation/translation/coordinates1.pdf>  
<https://www.mathworksheets4kids.com/transformation/translation/shapes1.pdf>

## ***Reflection***

The technology that I chose to use for my lesson is called Nearpod. My partner teacher last year talked about Nearpod a lot and how much she enjoyed using it, so I thought that this would be the perfect opportunity to familiarize myself with the program. In my previous year of teaching my partner teacher was incredibly tech savvy and she would spend hours working through different online programs learning them and figuring out how to implement them into her lessons. Seeing this and the value it added to her students comprehension over the course of the year was motivating to implement it into my own classroom, I was just still unsure as to how that would look. When she talked about Nearpod she mentioned how it had the ability for students to be interactive with the lesson and also the ability to link websites and videos when needed. Her passion and excitement over this tool peaked my curiosity. She eventually got me a login and told me to use it when I can. I used it a couple times during the end of the year simply to display what the students needed for the day but did not use it much more than that. When this assignment arose I thought that this would be the perfect time for me to actually dig into this program a little more and utilize it for what it really was meant for. After using it in my classroom I can definitely see how much value is within this tool, and I can't believe I waited so long to use it.

The framework for TPACK specifically added value to creating and implementing this lesson. By using the framework of TPACK I was able to create a lesson plan where all three components came together to add value to the students understanding of the material that otherwise would not have been supported by technology. In my own teaching I feel that my CK and PK are sound. I have a very good understanding of my content and I am able to easily express that information to my students. Where I struggle is with the TK aspect of education. This can be considered a downfall because so much of education is technological. I understand that I need to start utilizing technology more often and that in time the TK aspect of teaching will improve and become a valuable and more natural part in creating my lessons. What this lesson did was allow me the opportunity to practice implementing technology in a meaningful way. It showed me how to integrate TPACK as a whole and utilize my knowledge of the mathematics while utilizing the technological aspect of the lesson as

well. By completing this assignment and teaching my lesson through this tool, it has given me the confidence to seek out other technological tools that I have been intimidated by and potentially utilize them in future lessons.

The affordances of the technology would be the versatility of the program. Rather than it just being a slide show presentation, the students are able to interact and answer questions, show work to different problems, and complete assignments that are linked into the presentation. By allowing students to be interactive this helps students remain engaged and focused during the lesson rather than having a lecture type presentation where students tend to disengage more frequently. Also, the cost to use Nearpod is free, unless you would like to upgrade. With the free version you still have access to quizzes, matching, links, slideshows, etc. The constraints of the program would be that the presentation choices are limited. You really only have a few options for font, font size, color, etc. Also, uploading mathematical problems in the quiz formats and matching has proven to be difficult. You have to find problems that you can clip from worksheets online or images online to upload into the program. This makes it difficult when you have a specific problem you want to have as a question and you are unable to easily write it into the question format Nearpod gives.

This tech tool could easily be used across different subject areas. The capability and tools within the website are adaptable and easy to navigate. Other subjects could easily create presentations that allow for the opportunity for students to interact and engage in the material. I could see it being used to link web pages for a history class when students need to access information about a specific period in time. The matching game could also be used in English or Science for students to practice their vocabulary. Another way that I could see utilizing this tool is for when there is a substitute. I would create a presentation using the student-paced option and give the substitute the code to present to the students. This way students are actively working on mathematical material and they can work at their own pace. Since you can link assignments and problems through the presentation I could actively monitor their progress through the slides by the answers they submit. It's would be a great way to ensure students are completing what is expected as well as see who is understanding the material and who is still struggling.

This lesson allows me to see that utilizing technology does not have to be overwhelming or complex. It allows me to go outside of my comfort zone and gives me the opportunity to collect data instantly that in the past would have taken time to create and grade, then address the following day. With instant feedback I can change my trajectory of the lesson if students are struggling with the material or if they are ready to continue on. This also allows me the ability to recognize students who are struggling and while the other students are moving on to completing the assignment I can pull these students and work with them one on one, during the same class period or during an enrichment hour, to ensure they grasp the concept. This assignment has allowed me to see that learning new technology is not always going to be complicated or overwhelming and that by spending some time looking into different tools I may be able to find something that is beneficial to my students overall understanding.