Simplifying Linear Expressions

5 Day Intervention: 7th Grade Math

OLE: https://margar336.wixsite.com/solt-2018

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Description of this Project

The students who are going to use this Online Learning Environment (OLE) are enrolled in The Ohio Virtual Academy (OHVA). This is a project to address the need for intervention for students with disabilities. OHVA has their own Learning Management System (LMS) that is designed by K-12, a national company. Blackboard Collaborate is a browser-based internet conferencing software that the students use to connect to live sessions daily. The students are to read the lesson pages, watch all videos and do the assignments in the OHVA LMS. They are required to attend 90 minutes of live sessions in math every day. They use Blackboard Collaborate to attend these live sessions. The first sixty minutes of the live sessions are dedicated to direct instruction by the general education teacher and the intervention specialist. Thirty minutes are set aside for the intervention specialist to work with the special needs students in small groups.

The students with special needs have a difficult time keeping up with the general education curriculum. They need extra support to be successful. This project is meant to be a supplement to the curriculum and a resource the students are able to access at any time. The OLE that is presented here will be available to the students twenty-four hours a day, seven days a week. Some of the information in this OLE will be used and explained during the thirty minutes of intervention time.

Blackboard Collaborate is used by the students and intervention specialist to meet in real time every day. This environment encourages live interactions between the students and the intervention specialist. The intervention specialist is able to present information to the whole group and set up breakout rooms for small group instruction. Interactive whiteboards are used to

give the students opportunities to use their tools to work out problems and to communicate with peers. Breakout rooms are also a good tool for small group work. The students will work in groups of 3 to complete the Mad Lib assignment introduced on Wednesday. Each group will work in a separate breakout room to complete the assignment. The intervention specialist will determine when the assignment will be due. The review, using KaHoot, will be done as a whole group during intervention on Thursday. The summative assessment, using Quizziz, will be done during class on Friday. The intervention specialist will put each student in a breakout room and they will application share so that the intervention specialist will be able to monitor their progress while working through the test.

TPACK Impact

The TPACK framework was used as a guide in designing this OLE. Strong math content knowledge and technology knowledge were used as the beginning of this design. Starting intervention with simplifying linear expressions is a good foundation for solving equations. The Ohio Learning Standards for Mathematics that are covered in this project are:

> 7. EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
>
> 7.EE.2 In a problem context, understand that rewriting an expression in an equivalent form can reveal and explain properties of the quantities represented by the expression and can reveal how those quantities are related.

The learning objectives for this project are based on the Ohio Learning Standards for Mathematics. The learning standards are written as "I can" statements. They are:

> I can identify like terms in linear expressions.
> I can combine like terms in linear expressions
> I can use the distributive property to simplify linear expressions.
> I can determine whether linear expressions are equivalent.

All students who will use this project are enrolled as online students at OHVA. They are required to spend at least 5 hours a day working in the LMS and supplemental materials to be successful in their education. Using third party websites were used to help the students meet the learning goals by giving them extra practice and immediate feedback. These websites are easily accessible, have several different ways of delivery and collect data automatically. Videos are imbedded into the learning pages so the students do not have to leave the lesson page to view them.

Constructivism, cognitivism and behaviorism were all used as the pedagogy for designing this OLE. Combining all three of these theories seems to fit well with the online learning environment. The students are able to interact with their peers every day during live sessions. They are encouraged to use the Blackboard Collaborate tools to chat, use the mic or write on the whiteboard to help each other construct meaning. Group work is built into this OLE in the form or a Mad Lib assignment. The students are given the opportunity to self-regulate their learning by working through the lessons pages on their own. Several exit tickets are presented to help them understand their knowledge of the content. Some practice problems are assigned as formative assessment. Keeping in mind all three of these pedagogical theories, seems to be the best way to give students the opportunities to use different learning styles, construct meaning and engage in collaboration and communication with peers and the instructor.

Design and Development:

Backwards design was used for this OLE. The assessments were designed first. Formative assessment in the form of exit tickets, homework and observation are used each day to gauge learning. The summative assessment is a reflection of the knowledge that is outlined in the

Ohio Learning Standards for Math. The summative assessment is designed using a third party website. The assessment generates the questions in random order for different learners. The program will gather the data from the list of participants so it can be analyzed for mastery. Concepts that are not mastered will be retaught.

The color scheme using purple, lime green and sky blue were chosen for the calming effect these colors have on students. Purple and green are complementary and are seen as black and grey in students who are colorblind. The type face for headlines and subheads are bold and easily read due to the san serif design. The upper and lower case characters are easy to read. The body text is a san serif typeface. This typeface is easy to read on the computer.

The lesson pages are designed for the students to download a PowerPoint Presentation and follow along with the video. They are encouraged to be active participants by writing notes on the presentation or in a math notebook. There are practice problems that are worth points toward their final grade. Rubrics are included to clarify how they will be assessed. The exit tickets at the end of the first two lessons are given for student self-assessment of those skills. The students and instructor will get instant feedback to show them how they are doing. Live session interventions will be adjusted, by the intervention specialist, according to the exit tickets.

Project Use:

This project is meant to be used in conjunction with live sessions using Blackboard Collaborate. The students will be given opportunities to interact with the content using polling, chat, mic, and tools during these live sessions. They will be given intervention time to do their group project at the end of the week. The intervention specialist will take some time during the

Wednesday intervention to explain the project and have the students sign up in their groups using Goggle Sheets.

The OLE will also be available for those students who are not able to attend the live sessions. It has detailed instructions and downloadable documents for the students to access twenty-four hours a day, seven days a week. The videos explain the process of simplifying linear expressions and how to proceed with the group assignment. The group assignment has six different versions to deter cheating. The computer generated auto graded summative assessment randomizes the questions for each log in. The summative assessment program will collect data for each student so the intervention specialist can analyze and adjust future lessons.

Conclusion:

This OLE was designed with the beginning of a school year in mind. It is able to be edited to reflect the different math content areas that are covered during the school year. Live intervention will be a very big part of peer collaboration and this OLE. The assessments and assignments will be modified to meet the student's needs. Communication and feedback will be encouraged between students and the intervention specialist throughout the school year.