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"What Works"

For this class, I developed a unit on second-grade math curriculum, as this is what I will teach next year. I created my unit with Case Study B in mind. Case Study B is similar to where I work, a low-income school that provides all our students with iPads or Chromebook. This technology is what my students used during Covid-19. For this assignment, I developed a virtual plan that I could use in the coming school year.

With most of the students reading below grade level, I decided to use video lessons to teach, as it provides visual and audio so students can pause and replay the video as needed. With this being a virtual module, behaviors will be less of a problem, and attendance will be more of a problem, so I would need to communicate with students individually to make sure they are progressing. If I used this during the school year, I would also use weekly or daily Zoom meetings to ensure students are on track and help answer any questions. I start the module with an optional review video, so this would allow students to review concepts that they missed.

I used multiple resources, websites, and programs to create a virtual math unit. To teach the content, I used Khan Academy videos. Some videos in this module are optional and can provide additional support to students as needed. For assessments, I used embedded surveys on the website and google forms I created myself and Kahoot! Quizzes offer variety and multiple choices. For exit tickets, I created example profiles on Zearn and Prodigy set up for 2nd-grade math. Zearn provides videos, lessons, quizzes, and games to learn the math concepts. It lets students go at their own pace and provides the teacher with data on how the student is

progressing. Prodigy is an adventure-based math game that uses math problems instead of game battles. These games also allow students to work at their own pace and provide data. Students have the option between these two applications, so they have a choice or can use both for extra math support.

In a two-year study conducted by John Hopkins school of education, "students expressed overwhelmingly positive feelings about the curriculum—almost 90% of students agree it is good for learning mathematics, and roughly 80% of students look forward to using it each day" (Morrison, Wolf, Ross, Risman, & McLemore, 2019). Zearn is a program used at my school, so I saw how it reinforces learning firsthand. As of 2019, it is used by "1.5 million elementary school students and 50,000 teachers across the United States" (Morrison, Wolf, Ross, Risman, & McLemore, 2019). Zearn provides multiple means of learning through videos, quizzes, and various games to teach math concepts. Zearn is a program that I would use for virtual learning.

Khan Academy is a website with videos that teach various concepts for preschool to college prep. It is a free service that schools, and parents have utilized for their students. There are multiple studies on the use of Khan Academy in class and the effectiveness of the resource. For example, a study by Yilmaz Zengin looked at the use of Khan Academy in a blended environment. It determined "the effect of the flipped classroom approach designed with using Khan Academy materials and mathematics software for the implementation of the topic of double integrals on students' academic achievement" (Zengin, 2017). Khan Academy was influential in a flipped classroom environment and allowed students to study and learn at their own pace in and out of the classroom.

To use Universal Design for Learning, I provided a variety of quizzes and other programs and activities to assess students. Within my module, I provided a link to the Khan Academy

website, where students can follow the lessons for the videos used in my module. Khan Academy has been used within UDL. Researchers used their UDL Scan Tool to measure lesson content, and alignment of 478 randomly selected math, science, and world history lessons from Khan Academy with UDL principles, guidelines, and checkpoints (Smith & Harvey, 2014). Through this online format, students can learn their subject within their timeline, which makes it more accessible to more students.

This module will work for multiple students. Students can work at their own pace with the videos and rewatch them for extra understanding. Students also have options for some quizzes and which program to use to wrap up their learning. With the combination of control over pace and options, students of varying abilities will be able to excel in this module.

References

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Sean J. Smith & Evelyn E. Harvey (2014) K-12 online lesson alignment to the principles of Universal Design for Learning: the Khan Academy, Open Learning: The Journal of Open, Distance and e-Learning, 29:3, 222-242, DOI: 10.1080/02680513.2014.992402

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