Literature Synthesis
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Spring 2020

Our team directed our research towards the use of technology for students with Dyslexia. We decided to focus on literacy and how we can improve students' reading comprehension and writing skills. Our group had a unique dynamic that allowed for experience and expertise in multiple content areas and across multiple age groups. Dayna, the host teacher, is a grade three to four teacher at Newbridge. Michael is an 11th grade Inclusion Specialist at High Tech High. And I am a third grade multiple subjects teacher at High Tech Elementary. NewBridge has about 100 students in the school and is made up of students with reading disabilities. The majority of the school has Dyslexia, but also helps students with a variety of reading deficits.

With a focus of Universal Design for Learning (UDL) we were able to share goals that we have for our students and our classrooms. We had an overwhelming interest in the way that Dayna incorporates technology in her classroom. Dayna has a unique class of seven students, all of who have Dyslexia.

Universal Design for Learning

I began my research with a focus on UDL. UDL considers ways to support the non-traditional learner (Kieran & Anderson, 2019). UDL encourages teachers to think about how they are engaging students by providing a balance of challenges while still setting high expectations. Our goal as a team was to learn about incorporating technology in lessons that is designed for each learner.

As our society continues to evolve, the importance of technology in the classroom becomes more prevelanent. Ignoring the existence of devices and tools to help students with disabilities can affect them from reaching their maximum performance (Alnahdi, 2014). There are a total of seven UDL principles that should be considered when choosing technology to use in the classroom: 1) equitable use; 2) flexibility in use; 3) simple and intuitive use; 4) perceptible information; 5) tolerance for error; 6) low physical effort; 7) size and space for approach and use appropriate (Alnahdi, 2014). Teachers should be exposed to the technology and familiar with the technology chosen before it is introduced to students. Dayna felt passionate about Kahoot. Kahoot is an interactive quiz that can be created by students and taken by students. Kahoot gives students the unique ability to personalize and "game-ify" any content. Kahoot is a multimodal platform. Students cane build and create, use, and share Kahoot to meet learning targets. It is also a fun and interactive way for students to collaborate.

Settling on Kahoot led us to our plan of action, “If we as teachers game-ify learning opportunities, then students will collaborate using Kahoot […] resulting in **better engagement** and internalization of comprehension questions with multi-modal answers”

With a focus on literacy, we wanted to know how students use technology and can collaborate over specific applications. This unique opportunity and platform lends itself to an equity goal centered around student collaboration. Our equity goal is, “How can students actively participate (student talk and collaboration) using technology, and improve socially in a small group setting?” The hope is that a small group of students (3-4) work together to create a Kahoot quiz that shows their ability to read and comprehend a text. This will also build autonomy and allow for students to learn about applications on their own, while simultaneously grappling with the content.

Pause for Distance Learning

In March we had to pause and adapt to distance learning due to COVID-19. There was a learning curve in how Dayna, Michael, and I would work as a team when we were not present together. We met over Zoom and worked through a plan about how to continue. Luckily for us, Dayna uses technology in her classroom and her students are used to navigating new technology on a regular basis.

Our team was lucky enough to have a few affordances on distance learning. Universal Design for Learning emphasizes multiple means of engagement and our lesson gave us the opportunity to do so.

What the research says

During my research, I read about the importance of the needs of dyslexic learners when using online applications. Dyslexic learners learn best when multi-sensory learning is involved. Dyslexic learners need to be presented with applications that cater to auditory, visual, kinesthetic, and tactile input learners. Reading is a holistic activity because it utilizes a combination of brain activities that requires processing of different brain components simultaneously (Reid et al., 2013). When designing lessons using technology it is important to consider the types of learners that it is reaching and to make sure it is covering all different learner needs. Technology applications and devices align with UDL strategies and help Dyslexic learners.

Dyslexic learners learn best when material is presented visually and they can interact with it kinesthetically (Reid et al., 2013). Dayna introduced Kahoot to our group because of how accessible it is to her students. Dayna was concerned with engagement levels and Kahoot allows for student voice, creation, and feedback.

Focus on Reading Comprehension

During the lesson planning portion of our lesson study we wanted to be mindful of each students' unique needs. Dayna only has eight students in her class, which led us to be more cognizant when planning for each student. We wanted to create a lesson that gave students to develop socially emotionally with a group and individually. UDL and Culturally Responsive Teaching (CRP) encourage teachers to think about how they are engaging students by providing a balance of challenges while still setting high expectations (Kieran & Anderson, 2019). It is important that students have the skills to self-monitor their progress and understanding.

Our content goal is that students can demonstrate an understanding of the chapter book, "The Talking Earth" by creating a Kahoot quiz that includes questions about story structure, vocabulary, and sequence of events. When we were thinking about assessing students we wanted to provide a transparent opportunity between student and teacher. To do so, we created a rubric for both students and teachers that is in student language ("I can" statements). Clear learning objectives allow students to understand the expectations and reflect on their effort and work when they are finished.

Last, we created a graphic organizer. Using graphic organizers is a UDL strategy. Our graphic organizer gave students with reading deficits a structure to follow and connect to their prior knowledge. The graphic organizer would also help students acquire new information that can be connected to past information (both prior knowledge and reading comprehension) (Lopez & Campoverde, 2018).

Finalizing the Lesson

As a team we developed a lesson that engaged third and fourth grade students with dyslexia by giving them opportunities to build their confidence, engage with their peers, and interact with reading and writing content in a fun and interactive way.

References

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