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The Integration of Technology with UDL and RTI in Inclusive Classrooms

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Abstract

The transition to inclusive classrooms in Ontario meant classroom environments had to adapt to the needs of students instead of students being expected to adapt to a standardized curriculum (Parekh, 2018). Although challenges existed in the implementation of this student-centered approach, some teachers addressed these obstacles through the use of technology, Universal Design for Learning (UDL) and the Response to Intervention (RTI) frameworks. This paper combined two studies which included both teachers' and students' perspectives of inclusive classrooms. The primary study examined the instructional practices of eight elementary school teachers who experienced successful transitions to inclusion in bricks and mortar and virtual classrooms. The second study explored the experiences of students with and without disabilities who participated in virtual learning during the COVID-19 pandemic. Through online interviews and classroom observations, the teachers demonstrated how technology could increase student engagement, differentiate instruction, and provide students with alternative instruction and assessment methods. However, inconsistencies were revealed in screening approaches to identify the needs of students and monitor students' progress. The students engaged in multiple options of learning with some experiences more positive than others. The paper concludes with a summary of technology-based inclusive practices shared by teachers and students.

Keywords: inclusion, technology, UDL, RTI, virtual, screening, assessment, intervention

Introduction

My research was founded on the premise that all students can be successful learners in inclusive classrooms if their needs are identified early, universal instructional strategies are implemented, and students' progress is monitored frequently. In 2009, the Ontario Ministry of Education (OME, 2013) established guidelines to support this student-centered approach to learning in the educators' resource, *Learning for All: Guide of Effective Assessment and Instruction for All Students, K-12.* However, the processes of early identification and intervention outlined in this guide may be challenging to execute if teachers have limited time or a lack of classroom support. This paper examined two complementary studies which: 1) explored how some teachers integrated technology into two instructional frameworks to overcome teachers' obstacles, and 2) sought the perspectives of students with and without disabilities about their learning needs in virtual learning inclusive classrooms.

The approaches within the *Learning for All* guide were derived from the instructional frameworks, Response to Intervention (RTI) and Universal Design for Learning (UDL). In RTI, teachers use a three-tiered model to identify learning needs and implement interventions at increasing levels of intensity depending on student needs (National Center for Learning Disabilities, n.d). The essential components within each tier are screening to identify needs, implementing interventions, and monitoring students' progress (National Center on Response to Intervention, 2010). UDL offers students options of learning through its three principles of providing: multiple means of representation; multiple means of action and expression; and multiple means of engagement (Cast, 2018). Despite the benefits of UDL and RTI, teachers in Cowan and Maxwell (2015) study indicated the RTI process was too cumbersome in terms of paperwork. One teacher stated, "There are too many steps to get to where you want to get to" and another teacher said "It's too time consuming" (pp. 6-7).

Technology may help teachers maximize efficiencies and support the unique needs of students. In the *Learning for All* guide, the OME encouraged school boards to identify the needs of students and monitor their progress using class profiles and student profiles, but since class profiles were optional, all school boards were not using them. However, some school boards automated the process of class and student profiles to enable easier access by all teachers (OME, 2013). Greenwood et al.'s (2016) study revealed that some assistive technology programs placed less demand on teachers and were less intimidating for some learners than engaging in small-group instruction led by a teacher. Technology can be effective in both bricks and mortar and virtual classrooms. Coy et al. (2014) indicated that all students, including those with disabilities can benefit from online learning with its multiple features and because the same UDL principles can be applied online and in the physical classroom. Although the literature independently evidenced the benefits of UDL, RTI and technology-based solutions, there was little research considering the impacts of the simultaneous integration of technology within UDL and RTI in the transition to inclusive classrooms (Coy et al., 2014; Cowan & Maxwell, 2015; Greenwood et al., 2016). Therefore, in order to explore the experiences of both students and teachers, my research questions were:

- How were teachers using technology and Universal Design for Learning (UDL) to identify learning needs, implement instructional strategies and monitor student's progress in the RT/ framework?

- Which educational models, strategies, and tools addressed the needs of all students in virtual inclusive classrooms?

Methodology

Two case studies were completed with: 1) eight elementary school teachers in bricks and mortar and virtual inclusive classrooms, and 2) four elementary and three high school students and their parents who participated in virtual learning during the COVID-19 pandemic. The data collected for the studies included online interviews, online classroom observations and a document analysis of ministry and school board inclusive education policies and processes.

The teachers were recruited through their school board as having demonstrated exemplary inclusive practices and the students with and without disabilities were recruited through a virtual learning network. A consent form or assent form (for students) was completed by all participants to ensure confidentiality, voluntary participation, and anonymity through the use of pseudonyms. The data was analyzed using provisional, descriptive, *in vivo* coding and pattern matching which emerged into themes for both studies.

Findings and Discussion

Teacher Study

Themes which emerged in the teacher study were related to the three components of RTI: approaches to screening, intervention, and progress monitoring. Teachers expressed the importance of building relationships to identify students' needs and strengths in the screening process. However, they also acknowledged having inconsistent access to assessments and the use of class profiles and student profiles which resulted in delays in special education support received by some students. Automated class profiles which have been created by some school boards in Ontario may create efficiencies in the screening process (OME, 2013). Teachers revealed that student engagement was essential in the implementation of interventions, so they used technology, differentiated instruction, and UDL to keep students engaged and motivated to learn. In order to measure students' progress, the teachers provided students' choice of assessment methods, but teachers conveyed challenges in marking and feedback. Some teachers used online educational resources with automated analytics to manage their time, however these were generally not board approved resources. A review and revision of board approved resources may aid teachers in having access to technology-based resources that are beneficial to both students and teachers.

Student Study

Themes from the student study aligned with the UDL principles, multiple means of engagement, representation and action, and expression. The positive experiences shared by the students mirrored the UDL instructional strategies expressed by successful inclusive education teachers. Since the students were taught by teachers with varying experience in virtual learning classrooms, a balance of effective and ineffective instructional strategies was accumulated.

The primary challenges expressed by the students in virtual learning classrooms were

limited opportunities for engagement and connections with peers. Students were observed to be more focused and engaged in the lesson when teachers maximized the technology features in the virtual learning platform. These observations mirrored Coy et al.'s (2014) study which demonstrated that students with and without disabilities benefitted from online learning when teachers used a variety of technology features to enable multiple options for learning.

Conclusion

The teacher study uncovered a broad range of creative strategies teachers used to identify the needs of students early, implement universal interventions, and monitor the students' progress.

Author's Contributions

Diane Montgomery conceived and designed research, performed interviews, analyzed data and interpreted results, and drafted and edited the revised manuscript. Kathy Snow supervised the conception and design of the work, and supervised the drafted manuscript. All authors read and approved the final manuscript.

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Ethics Statement

For the purpose of this study, ethical authorizations were requested and obtained from the research ethics committees of the University of Prince Edward Island. Ethical authorizations were also obtained from the school board for the study on inclusive education teachers.

Conflict of Interest

The authors do not declare any conflict of interest.

Data Availability Statement

The data generated and analyzed during the current study are not publicly available due to ethics requirements. They are available from the corresponding author on reasonable request.

References

CAST (2018). *Universal Design for Learning Guidelines* (version 2.2). http://udlguidelines.cast.org

Cowan, C., & Maxwell, G. (2015). Educators' perceptions of response to intervention implementation and impact on student learning. *Journal of Instructional Pedagogies*, *16*. 1-11. https://www.aabri.com/manuscripts/142118.pdf

Coy, K., Marino, M., & Serianni, B. (2014). Using universal design for learning in synchronous online instruction. *Journal of Special Education Technology*, *29*(1). 63-74. https://doi.org/10.1177/016264341402900105

Greenwood, C. R., Carta, J. C., Kelley, E. S., Guerrero, G., Kong, N. Y., Atwater, J., & Goldstein, H. (2016). Systematic replication of the effects of a supplementary, technology-assisted, storybook intervention for preschool children with weak vocabulary and comprehension skills. *The Elementary School Journal*, *116*(4). https://doi.org/10.1086/686223

National Center of Learning Disabilities. (n.d.). *What is RTI?* RTI Action Network. http://www.rtinetwork.org/learn/what/whatisrti

National Center on Response to Intervention. (2010). *Essential components of RTI*. American Institutes for Research. https://mtss4success.org/

Ontario Ministry of Education. (2013). *Learning for all: A guide to effective assessment and instruction for all students, kindergarten to grade 12*. Queen's Printer for Ontario. https://files.ontario.ca/edu-learning-for-all-2013-en-2022-01-28.pdf

Parekh, G. (2018, March 16). *Exploring inclusion in Ontario*. Inclusive Education Canada. https://inclusiveeducation.ca/2018/03/16/exploring-inclusion-in-ontario/