

Annotated Bibliography

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Hall, T., Cohen, N., Vue, G., & Ganley, P. (2015). Addressing learning disabilities with UDL and technology: Strategic reader. *Learning Disability Quarterly*, 38 (2), 72-83. doi: 10.1177/0731948714544375

Researchers in this mixed methods study analyzed whether Universal Design for Learning (UDL)- Curriculum Based Measure (CBM) embedded directly into an instructional digital environment supported better reading outcomes for all students, particularly those with disabilities, and determine whether providing support for teacher instructional decision making and differentiated instruction for individual students leads to appropriately supported reading. The study was conducted in the Northeast United States. 284 students participated in the study, and 73 were identified as students with disabilities. Students were given a pre- and post-tests using the Gates-MacGinitie (MacGinitie, MacGinitie, Maria, Dreyer, & Hughes, 1999) standardized reading measure were administered to all subjects. Traditional *t* tests for differences using the pre- and post- test standardized measures were used for the quantitative data. Three researchers coded the qualitative data by themes with a 20% overlap and the reliability among coders was 93%. Students, who had *online* progress monitoring in the Strategic Reader showed greater growth on reading measures than those who used the same tool without online measures. Students were also interviewed about their experiences. This article was intended for educators and administrators who are looking for research-based strategies to improve reading comprehension using an online or offline CBM. There are some limitations to the findings of this study. There was an uneven distribution of participants across grades. The two groups were not equivalent based on pre-test results. Lastly, instructional conditions varied slightly. The results provide promising paths for both curricular design and further research in the design of digital

environments. Lopez, Rodriguez-Fortiz, Rodriguez-Almendros, & Martinez-Segura (2013) also found that special education students were more engaged and had more improvement academically when using technology; however, their population was elementary aged students in Spain, not middle grade students in the United States.

Lopez, A., Rodriguez-Fortiz, M., Rodriguez-Almendros, & M., Martinez-Segura, M. (2013).

Mobile learning technology based on iOS devices to support students with special education needs. *Computers and Education*, 61 (February 2103), 77-90.

This research article focuses on evaluating the use of a mobile learning platform called Picca with students who have specific support needs in different areas of development. This study consisted of 39 students with special education needs in special or elementary school in Spain. The study lasted for 6 months. This study was a pre-experimental design. Researchers use a qualitative study involving a questionnaire assessing skills that included 51 items and an evaluation questionnaire on the use of activities that included 15 items. The authors concluded that the use of technologies and multimedia increases the interest of students. As a limitation, it is important to note that the study sample was neither randomized nor statistically representative of the special education needs students collective as a whole. Moreover, it is a pre-experimental design without control group. The authors note the results, while promising, should be applied cautiously for other factions of the special education needs population. The article is intended for special education teachers who are considering using technology, particularly Picca in their classroom. Shin, Sutherland, Norris, & Soloway, (2011) also determined that technology helped

students to be more attentive; however, their study was conducted in the United States, not in Spain.

Madeira, J., Silva, C., Marcelino, L., & Ferreira, P. (2015). Assistive Mobile Applications for Dyslexia. *Procedia Computer Science*, 64 (2015), 417 – 424.

In this article the researchers propose and implement the prototype of a mobile application aimed at re-educating and monitoring the learning of students with dyslexia. The audience for the application is students between 10 and 12 years old. For this evaluation study, 8 children attending the 5th grade participated: 4 are dyslexics' and the other 4 are regular students. The method of research for this article was quantitative. They used the data from the application itself such as the time spent and scores earned. The results were unexpected: dyslexics, overall, obtained similar, and sometimes better results than the control group. The huge growth in mobile technologies allowed for the creation of numerous new learning solutions that can be adapted for specialized education, individualized and adapted to the rhythm of learning of each student. The researchers did not list limitations, however there are some limitations to note. The sample size is small which makes it hard to generalize its findings. Also, there was no pre- or post test given to students to show if there was growth in connection with the application. Teachers who work with students with Dyslexia will benefit most from this article. Skiada, Soroniati, Gardeli, & Zissis, (2014) also found that technology is easily adapted to students with dyslexia; however, their research was more about the design process of a mobile application, not about the usefulness of an application for students with dyslexia.

Naraian, S. (2010). General, special and ...inclusive: Refiguring professional identities in a collaboratively taught classroom. *Teaching and Teacher Education, 26* (8), 1677-1686.

This article studies collaborative teaching in the inclusive classroom. Data for this paper was drawn from an ethnographic study that was conducted within a first-grade elementary classroom in a large urban setting in the Northeastern United States. The researcher used purposeful sampling to determine where the study would take place. Ethnographic techniques of participant-observation and interviews with members of the setting were used to collect data during the school year. Interview transcripts and field notes were analyzed using a constant-comparative method (Merriam, 2009). Codes were identified inductively, using open and axial coding and subsequently refined through an iterative process (Bogdan & Biklen, 2007; Merriam, 2009). This article mainly focuses on the experiences of a woman named Stephanie. Stephanie is a special education co-teacher. The researcher found through all of her discussions, interviews, and observations that general education teachers and special education teachers have to understand that they are partners, not two people working on their own without common goals. The limitations of this study are the small sample size, the methodology which prohibit the generalization of the data collected, and the article was published in 2010. There have been many improvements in inclusive education since the article was published, however the information gathered is still relevant. The intended audience for this study is special education and general education co-teachers.

Parr, M. (2012). The future of text-to-speech technology: How long before it's just one more thing we do when teaching reading?. *SciVerse ScienceDirect*, 69 (2012), 1420-1429.

This article uses ethnographic inquiry as its basis. Parr chose ethnographic inquiry because it offers a naturalistic way of both seeing and representing, allowing inquiries to unfold in ways that are responsive to the needs of the participants, research contexts, and other stakeholders. The inquiry spanned an eight month time frame. 28 students were observed before, during, and after the implementation of text to speech technology (TTST). Data were gathered through diverse methods including participant observation, interviews, archival documents, photographs, reader response notes, and conversations, both formal and informal. The study found that as an intervention, TTST fits as both preventative for all and as reactive for few, but it is far more likely that once understood it will find its way as long-term and life support. This article is intended for people who are interested in learning more about the use of TTST. It will also be beneficial to educators who are interesting in TTST and its use with students. Hall, Cohen, Vue, & Ganley, (2015) also discuss using technology in reading instruction; however, they used a mixed method study to determine whether technology supported reading instruction. Parr used and ethnographic inquiry to determine if TTST was beneficial to students when learning reading.

Shin, N., Sutherland, L., Norris, C., & Soloway, E. (2011). Effects of game technology on elementary student learning in mathematics. *British Journal of Educational Technology*, 43 (4), 540-560. doi:0.1111/j.1467-8535.2011.01197.x

This is a mixed methods article that reports the effects of game technology on student learning in math. The study is made up of two sets of data. The first set of data was collected from two second grade classes over the course of 13 weeks. One class used a technology-based game. The other class primarily used a paper-based game. The purpose for this section of the study was to explore the performance differences between the two groups. The second set of data was collected from three classes over the course of four months. The students in the three classes played a technology-based game, and then the data from the game and surveys were collected in order to show if there was any correlations between students scores and learner characteristics. Both groups of students were given a pre- test, a five week test and a final test to determine how much growth there was. The tests were 70 questions and consisted of addition and subtraction problems. Both the technology based and technology based were allotted the same amount of time daily. Students were given a survey to measure their attitude toward math. The survey found that students who participated in the technology based game had a better attitude toward math. It was also determined in both data sets that using technology-based games was beneficial to all students who participated. The results of the scores between the pretest and the 5-week test revealed that students who used the technology-based game outperformed those who did not use it. This article would benefit teachers and administrators who are considering using technology-based gaming in education. There are some limitations that should be noted as well. The results cannot be generalized to higher order thinking at this time. Also, the specific classroom strategies used by teachers were not monitored. That could effect the outcome. Madeira, J., Silva, C., Marcelino, L., & Ferreira, P. (2015) also used gaming applications with students; however, their

primary focus was students with disabilities. Shin, Sutherland, Norris, & Soloway focused on whether technology for a game worked better than a paper method.

Skiada, R., Soroniati, E., Gardeli, A., & Zissis, D. (2014) EasyLexia: A mobile application for children with learning difficulties. *Procedia Computer Science*, 27, 218-228.

This article focused on the design of a mobile application for children with special learning needs. The researchers started by gathering input from students and experts in the field. Using a mixed method of quantitative and qualitative, the researchers to reveal information about learning outcomes, gains, and insights researchers were able to design their application. Five students with dyslexia participated in this evaluation study. Parents of students with dyslexia answered the survey. They evaluated the usability of the application within the learning environment by employing the well-researched generic usability attributes. The researchers gathered and analyzed the data from the applications. Most of the students indicated a higher performance (based on their score achievements) compared to the previous evaluation. The researchers concluded that by evaluating the application with a group of students, all of the students showed their preference in practicing and completing the tests on a mobile device rather than on paper. The application also helped students stay focused and avoid distractions. This article would be beneficial for educators looking for ways to help their struggling students with dyslexia. The sample size was very small so the results should be applied with caution. Hall, Cohen, Vue, & Ganley (2015) also found that students were more engaged and less distracted



when completing tasks on electronic devices; however, they focused on students with any learning disability, not specifically students with dyslexia.

Starčić, A. (2010). Educational technology for the inclusive classroom. *The Turkish Online Journal of Educational Technology*, 9 (3), 26-37.

The researcher completed a qualitative study to determine the value (merit and worth) of the Educational technology curriculum, so as to improve it and assess its impacts. The purpose was to capture the process and collect information on teaching and learning activities and characteristics. The qualitative data analysis was conducted in three stages: data description, analyses and summary, interrogation and identifying patterns. The researcher used student reflection journals, focus groups, students' project work, and student essays to gather data. The participants selected for testing were all part-time students in the second semester of primary classroom teaching course. There were 43 participants who all had some experience in pedagogical practice and with special needs students. It was found that inclusive education was the area where most candidates felt the weakest. The candidates were taken through an educational technology class. The researcher recommended that the digital divide of young disabled people can be reduced with improved access to computers and internet in the context of school work which could enhance digital literacy and e-participation of students in a society. She also concludes that Instructional technology is best taught off her findings by incorporating it in conjunction with competences of cooperation, management, organization, and of other generic and subject-specific competences. This article is intended for teachers looking for information on

inclusive technology and pre-service teachers. The limitations of this study are the small sample size and how the researcher generalizes the information based off that sample size.

White, H., & Robertson, L. (2014). Implementing assistive technologies: A study in the Canadian elementary school context. *Computers in Human Behavior, 51*, 1268-1275.

This study takes place in one specialized class within a medium sized school board comprised of urban and rural schools in Ontario, Canada. This district's more than 50,000 students are clustered in several communities from which some students are with- drawn for special support.

The study occurred over a two-month period during which the researcher visited the classroom and interviewed the teachers weekly for six weeks plus pre- and post-program interviews.

Qualitative data include verbatim interview transcripts of interviews with the two teachers, observations, and student artifacts. Quantitative data include the results of reading tests at the beginning of the program, during the second week, and at the end of the program. The results show that students were motivated to read more through the use of the Kurzweil TTS software.

They were also able to demonstrate improved reading comprehension and fluency while using the software. This article is intended for teachers and administrators who are looking for ways to help the students who have a disability in reading. There were some limitations that were noted.

First, the software is not available to large classes. Next, the sample size of the study restricts the study from being generalized. Last, the student progress was facilitated and managed by the teachers and researchers. Teachers continuously changed their approaches until the students were more successful. Hall, Cohen, Vue, & Ganley (2015) also noted that using a specialized

technological program kept students more engaged; however, they were using an integrated CBM, not a separate software like the Kurzweil TTS software.

Wu, T., Chen, M., Yeh, Y., Wang, H., & Chang, S. (2014). Is digital divide an issue for students with learning disabilities?. *Computers and Human Behavior, 39* (October, 2014), 112-117.

The purpose of this study was to examine if digital divide exists between elementary school aged children with learning disabilities (LD) and their non-disabled peers in Taiwan. This study recruited 77 male and 40 female students with LD, and the ratio is similar to the statistic data of students with LD in Taiwan (Taiwan Special Education Transmit Net, 2013). All the students with LD study in regular class and meanwhile receive special education in resource program. The researchers used a questionnaire that they designed for the purpose of this study. The survey focused on two major sub scales: current status of information and communication technology (ICT) access and ICT competencies. A Chi-square test was used to examine if the opportunity to access ICT was statistically different between children with and without LD. An independent samples t-test was used to explore if the ICT competencies were statistically different between children with and without LD. The results indicated that no significant difference in the opportunities to access computers and the internet at home and at school between children with and without LD, but the children with LD performed poorer than their peers in almost all six computer skills. The intended audience for this study is educators and administrators who would like to know more about if students with LD experience a digital divide. As a limitation, it may

have been better to also include some achievement data which would offer some quantitative data to help support the information that was gathered from the questionnaire.