

**Literature Review**  
**The Benefit of Using Screencasts to Personalize Mathematical  
Instruction**

Jorge Mendoza

Curriculum & Instruction

Seminar in Learning, Design, and Technology

## **Introduction**

With the rapid expansion of technology in schools, it is important that educators maintain the instructional integrity of personalizing their instruction to their learners. Personalizing the instructional content to individual learners has been considered a Best Practice and has yielded great academic results *Marzano, R. J. (2007)*, therefore it should still be considered an integral element when providing instruction to remote learners. An educator must not negate the effectiveness of pedagogical “best practices” simply because the delivery of instruction has changed from in-person to solely online. The consequence of negating personalized instruction to remote learners will be evident the following school year, when teachers and administrators will try to analyze why certain remote learners have gaps in their education. They will most likely give the answer I’ve heard being given in my school “it’s because of the pandemic” when in reality, it was the teacher who was not technologically literate and therefore relied on apps such as Dreambox to teach mathematical content to their learners instead of providing personalized mathematical instruction that is based on research.

## **The Benefit of Personalized Instruction**

As the teacher of record, one must first know pedagogical best practices that are based on research *Berliner, David C. (1986)*. As an elementary school teacher, I was taught early on in my career to “know my kids.” I taught at a Title I school and the needs of our learners were many and varied from classroom to classroom. I had learners in my class who were on-grade level, above grade level, below grade level, and well-below grade level, and I was expected to provide rich instruction to each of my learners that

would help them be successful for the current school year, as well as prepare them for the years to come. The principal in my school made it a priority for all teachers to be properly trained in best practices that were based on research such as those provided by Robert Marzano, or the pedagogy that was adopted by our district. I took many trainings at my school that increased my professional development, but the main underlying component needed to provide successful instruction was to know our students so that we could personalize the instruction to each of our diverse learners. Since the inception of my teaching career I was taught to “know my kids” so that I could personalize their instruction, but since I enjoy using technology, I started adapting our district’s curriculum so that I could seamlessly integrate technology as a teaching tool. This arose mainly out of a need. How was I to provide instructional content to all my learners within a short period of time? I still had learners that had learning gaps from years prior and I needed to cover those skills first before moving on to something more advanced. This is when I had the idea of creating screencasts to virtually “clone” myself. I would create mathematical screencasts with Camtasia that taught different skills and upload them to a website I created solely for my learners.

## **The Benefits and Instructional Gains Made by Screencasts**

I saw an exponential growth once I started to fully incorporate screencasts into my lessons. My learners were able to watch my instructional videos any time and any place, thereby addressing any previous gaps in their education at their own pace and at the comfort of their home. Not only that, but I had their parents actively involved in their learning. I would send messages to my learners’ parents reminding them to keep accessing my instructional website and to practice with their children. Both my learners

and their parents knew the content because I made it accessible to them. I was also able to provide successful re-teaching and intervention since my learners were able to watch the lesson I had finished teaching them once again. This allowed my learners to quickly grasp the concepts I was teaching so they could be ready for the next skill. My screencasts were a major component behind the increase in their learning. I would see the academic growth every year. The learners who came to me struggling with basic skills left my class being properly trained to learn the new concepts that awaited them the next year. The learners who were already on-level or above grade level showed an even greater gain. My bilingual learners demonstrated that the impossible was possible, by continuously outperforming their English peers on the English STAAR Mathematics exam.

Both Marzano (*Marzano, R. J. (2007). The Art and Science of Teaching*) and Berliner (*Berliner, David C. (1986). In Pursuit of the Expert Pedagogue*) agree that there is no one single solution to provide effective instruction, but rather it is a combination of different skills, pedagogy, and inherent traits. One of my skills was implementing screencasts to personalize the mathematical instruction my learners received, whether it was in-person or online. A reason that allowed me to create successful screencasts was the way I interacted with my learners through my screencasts *Hoepner, J., Hemmerich, A., & Sterling-Orth, A. (2016)*. I created my videos to mimic the way I taught my students face-to-face. I would ask my learners the same questions I asked when I taught them face-to-face, and the rigor in questioning increased as I progressed through the lesson. Having academic discourses in screencasts is something that benefits all learners *Cranny, D. (2016)* and has an even greater effect when teaching

learners who are learning English as a second language *Ghosn-Chelala, M. and Al-Chibani, W. (2018).*

## **The Benefit of Having Academic Discourses in Screencasts**

The way I teach doesn't change based on my surroundings. As I previously mentioned, I kept questioning my learners in my screencasts in the same manner I would question them face-to-face. I would essentially imagine I was there with them and would imagine the type of responses I would receive. I would orally provide correction to some of the common misconceptions I imagined they would have and would provide positive feedback when I imagined them giving me the correct response. This is a common "best practice" to implement when an educator wants to interact with their learners through screencasts *Thompson, R., & Lee, M. J. (2012).* Having continuous academic discourses with my learners in-class and through my screencasts allowed my learners to quickly grasp the academic vocabulary they are expected to learn. A scenario I remember when I taught first grade, was when the district math coach came to my class and heard the math vocabulary my learners were using. She was highly impressed by the academic vocabulary my learners were expressing, and she was even more surprised when my learners were asking each other to "justify" their answer.

The way I provided my instruction through screencasts doesn't deviate from the teaching I provided in-class, because I was initially trained to know my students. If I could give one key takeaway to any educator, is to "know your kids!" Knowing "my kids" is the main reason why I am able to provide successful lessons. I am able to provide personalized instruction be it virtually or face-to-face.

## Gaps in Literature

I chose to use Camtasia to create instructional videos, but since this is primarily the only tool I've researched, I wonder if there are other tools that are far more effective in creating instructional videos. Are there other screen recorders that are easier and allows faster rendering than Camtasia? My expertise falls within Camtasia, but I wonder which software is superior to that of Camtasia.

With the rapid increase in technology, I wonder what the future holds for instructional screencasts. One of the technological topics that highly interests me is the use of A.I. in education. I believe that one day the power of A.I. will be a main component of instruction, and if so, would screencasts still play a major role in instruction, or will the use of A.I. replace such videos, and if so, how?

## Conclusion

The best practice of personalizing the instructional content to learners should not be avoided just because there has been a transition in the teaching format. Personalizing the instruction to learners has been a best practice that has yielded great academic achievements and should therefore be continued regardless if the teacher is teaching in-person or solely online.

Instead of relying on apps such as Dreambox to replace mathematical instruction, educators should broaden their technological literacy and see the many technological tools and software that are available to teach. Spector covers many technological tools in his book that are already available to instructors *Spector, J.M. (2016)*. Negating the best practice of personalizing the instruction to students causes a

major ripple effect in their learning that will be evident the following year. This is our second year to teach after we went fully online, and I still hear teachers and administrators saying that the reason why their former remote learners have so many gaps is due to the “pandemic,” when in reality it was the homeroom teacher who was not properly trained to personalize the instruction to remote learners. One must remember that pedagogical “best practices” can still be implemented whether teaching in-person or solely online.

## References

- Winterbottom, Sandy (2007) Virtual lecturing: Delivering lectures using screencasting and podcasting technology, *Planet*, 18:1, 6-8, DOI: 10.11120/plan.2007.00180006
- Marzano, R. J. (2007). *The Art and Science of Teaching: A Comprehensive Framework for Effective Instruction*
- Guerrero, S., Baumgartel, D. & Zobott, M. (2013). The Use of Screencasting to Transform Traditional Pedagogy in a Preservice Mathematics Content Course *Journal of Computers in Mathematics and Science Teaching*, 32(2), 173-193. Waynesville, NC USA: Association for the Advancement of Computing in Education (AACE). Retrieved December 19, 2021 from <https://www.learntechlib.org/primary/p/40579/>
- Carr, A. and Ly, P. (2009), "'More than words": screencasting as a reference tool", *Reference Services Review*, Vol. 37 No. 4, pp. 408-420. <https://doi.org/10.1108/00907320911007010>
- Berliner, David C. (1986). In Pursuit of the Expert Pedagogue. *Educational Researcher*, 15(7), 5–13. <https://doi.org/10.3102/0013189x015007007>
- Spector, J.M. (2016). *Foundations of educational technology: Integrative Approaches and Interdisciplinary Perspectives* (2nd ed.)
- Thompson, R., & Lee, M. J. (2012). Talking with students through screencasting: Experimentations with video feedback to improve student learning. *The Journal of Interactive Technology and Pedagogy*, 1(1), 1-16.
- Cranny, D. (2016). Screencasting, a tool to facilitate engagement with formative feedback?. *All Ireland Journal of Higher Education*, 8(3)
- Ghosn-Chelala, M. and Al-Chibani, W. (2018), "Screencasting: supportive feedback for EFL remedial writing students", *International Journal of Information and Learning Technology*, Vol. 35 No. 3, pp. 146-159. <https://doi.org/10.1108/IJILT-08-2017-0075>
- Hoepner, J., Hemmerich, A., & Sterling-Orth, A. (2016). Use of Screencasting for Instructional Purposes: Ingredients for Success. *Journal of Teaching and Learning with Technology*, 5(1), 100-104.