



Source: "At Home Online Learning Resources and Podcasts for Kids," Atlanta Parent, published July 16, 2021. <https://www.atlantaparent.com/online-learning-resources-and-podcasts-for-kids/>. Accessed May 7, 2022.

The global COVID-19 pandemic generated momentous change in many facets of society, most notably in education. Teachers had to quickly find innovative ways to make sure that their students would not fall behind. Many found platforms like Zoom to be incredibly useful in engaging their students, however engagement had an overall drop-off in upper education. Middle-school, high-school, and college students, especially those involved in STEM education, found it more difficult to stay engaged in school.

Mrs. Sharita Ware, the 2022 Indiana Teacher of the Year recipient and middle school STEM teacher, encountered similar problems with her students. She felt her students were unable to take as much accountability for their education as they used to before the move to online learning. Teachers like Mrs. Ware needed to find different ways to make learning STEM at home as synonymous as possible to pre-pandemic schooling, each of them having varying degrees of success.

How Teachers Have Coped

Adjusting a normally in-person STEM class to a completely online format is no easy task. In an article from the National Science Teaching Association, teacher Jan Barber-Doyle explains that the move to online teaching made her feel as though she were starting her teaching job over again. [1] She often had to spend extra time figuring out how to teach the content she needed to over technological platforms. Many teachers were not well prepared to make the transition of their class content online, and thus had to learn how to use technologies alongside fulfilling their normal teaching duties.

Some teachers found themselves looking to outside resources to develop their new lesson plans. Sarah D. Sparks suggests in her Education Week article that "the overwhelming majority of teachers said they made their own lessons, in part from material culled from the internet." [2] Much of what STEM teachers had been doing in their classrooms prior to the pandemic had been centered around physical interaction with tools,

materials, and lab equipment. With the pandemic nullifying their use in learning, many teachers had to rework their entire curriculum to fit with an online setting, even using the internet to find ways of doing so.

Adapting To an Online Format

As much as this situation negatively impacted STEM teachers across the country, many were able to effectively adapt to their new situation. Teacher Kurtz Miller used the breakout feature on the online meeting platform Zoom during his class sessions to get his students to talk with one another as they did their work, which let them bounce ideas off one another as they solved class problems. [3] This simple yet effective way of managing the online learning environment allows teachers to keep the content of their classes while also maintaining the collaborative class atmosphere. Students can work on problems with one another and ask each other questions if they need help, similarly to what they had been doing prior to the pandemic.

Lab work, a major part of many STEM curricula, had to be reworked as well because of the shift to at-home learning. In response, many teachers provided their students with at-home lab kits that mimicked their in-class labs. For example, Lynn Huntsinger, an ecology professor at UC Berkeley, distributed soil lab kits to her students, which contained the seeds, jars, and specimens needed for each of the labs. [4] Having resources like these helped STEM students to continue to learn vital laboratory skills that would be necessary in their education, despite not being physically in their labs. Some teachers had their students work on virtual labs that still allowed students to receive the content of their labs and understand lab procedures. As James Palcik explains in his article in *The Journal*, students would watch online demonstration videos of the lab being performed or would use online simulations that mimicked the actual lab; their teachers would then provide them with data that they could use to measure the effects and quantities they needed to. [5] This method made sure that students were still learning necessary analytical laboratory skills.

Looking To the Future

STEM teachers from a variety of backgrounds all experienced the challenges of teaching during the global pandemic. Each was able to manage this situation differently as they helped their students' progress through their new mode of learning. Overall, the effect of the global pandemic on all teachers though was very profound. Some were bogged down by it, but they and many others were able to creatively adjust their teaching styles to better fit teaching in an online setting. This greater use of online resources persisted into the in-person setting once pandemic restrictions were rolled back, permanently changing how teachers approach educating their students. Many schools have had their teachers adopt online resources into their in-person curricula and have seen their students' learning be positively impacted. As such, there appears to be a positive outlook for an even greater level of online content being implemented into lesson plans because of the success of many teachers using it during the pandemic.



Source: "5 Tips to Help you Succeed with Distance Learning," Atlanta Parent, published April 8, 2020. <https://www.floridacareercollege.edu/blog/5-tips-to-help-you-succeed-with-distance-learning/>. Accessed May 7, 2022

Notes

[1] Debra Shapiro, "Teaching STEM during a Pandemic," NSTA, published 2022.

<https://www.nsta.org/resources/teaching-stem-during-pandemic>. Accessed April 2, 2022.

[2] Sarah D. Sparks, "Science Teaching and Learning Found to Fall off in Pandemic," Education Week, published April 12, 2021. <https://www.edweek.org/teaching-learning/science-teaching-and-learning-found-to-fall-off-in-pandemic/2021/04>. Accessed April 2, 2022.

[3] Debra Shapiro, "Teaching STEM during a Pandemic," NSTA, published 2022.

<https://www.nsta.org/resources/teaching-stem-during-pandemic>. Accessed April 2, 2022.

[4] "STEM Education during the COVID-19 Pandemic," Master of Education—Curriculum & Instruction, Eastern Washington University, published June 17, 2021. <https://online.ewu.edu/degrees/education/med/curriculum-and-instruction/stem-education-during-the-covid-19-pandemic/>. Accessed April 2, 2022.

[5] James Palcik, "Teaching STEM during COVID," The Journal, published September 19, 2020.

<https://thejournal.com/articles/2020/09/18/teaching-stem-during-covid.aspx>. Accessed April 2, 2022.