Mini Review

From Artificial Intelligence to Virtual Resource Pools: Where Should Teachers Select Their Elementary Mathematics Curriculum Resources?

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Introduction

The popularity of curriculum resource sharing websites is ever-changing [1]. In 2014, Pre-K through 5th grade United States teachers selected curriculum resources from websites like YouTube (76%), Discovery.com (59%), Scholastic.com (56%), PBS.org (55%), and Pinterest (46%) [7]. Other websites were also identified in that survey with a lower percentage like Google+ (28%) which ceased operation in 2019 and Vine (1%) which shut down in 2017. Then in 2019, the trending websites for elementary mathematics teachers changed to Teachers Pay Teachers (TpT) (89%), Pinterest (74%), Google (68%), National Council of Teachers of Mathematics (NCTM) (34%), and Education.com (23%) [2]. Currently we are seeing a new shift where teachers are using tools like Artificial Intelligence (AI) chatbots like ChatGPT to quickly create new resources for their classrooms [3].

Since 2016, I have researched and followed these trends. My research group found that 99% of teachers identified using virtual resource pools approximately weekly [2]. However, when we investigated the quality of the resources on TpT [4] and Pinterest [1], we found that the majority of its resources were categorized as lower levels of cognitive demand with less than 1% of the highest-level of cognitive demand. We also know these websites contain biased and inaccurate resources because they are from non-vetted sources [5]. My research team is currently investigating how teachers use AI chatbots to create their own mathematical curriculum. Preliminary results have shown that they have a higher level of cognitive demand than the virtual resource pools which is quite promising, but we found that what is constructed by an AI

chatbot cannot be immediately implemented in a classroom [3]. The AI text responses are not always appropriate for elementary students, and the text responses do not translate into usable materials in the classroom. Thus, teachers need to be critical of all resources they find online.

Despite knowing that each platform has issues, I personally believe that we should not teach an abstinence-only approach to using online resources, thus all my manuscripts discuss how teachers can Critically Curate, or thoughtfully select resources using teachers' pedagogical knowledge, content knowledge, personal experiences, and the purpose of the lesson [8]. However, I do have a personal opinion as to where teachers should select their classroom resources. Teachers, please search for mathematics materials from professionally vetted websites.

Teachers do not need to find the next popular social media trend. Rather, teachers need to use vetted resources, or resources that have been peer reviewed by an unbiased third party. Since ChatGPT and TpT can provide biased resources that can contain misconceptions, teachers can reduce their cognitive load by initially searching for materials that have already been peer reviewed. For example, in the United States, there are professional organizations like the National Council of Teachers of Mathematics (NCTM. org) and its state affiliates like the Virginia Council of Teachers of Mathematics (VCTM.org) that provide websites, journals, and books with activities and materials across all grade levels and mathematical content areas backed by supportive pedagogical moves. Do not reinvent the wheel or jump on the next popular

bandwagon, rather use what is available that is backed by years of research by using professional organizations' developed materials!

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Conflict of Interest

No conflict of interest.

References

1. Sawyer A, Dick L, Shapiro E, Wismer T (2019) The top 500 mathematics pins: An analysis of elementary mathematics activities on Pinterest. Journal of Technology and Teacher Education 27(2): 235–263.

2. Shapiro E, Sawyer AG, Dick L, Wismer T (2019) Just what online resources are elementary mathematics teachers using? Contemporary Issues in Teacher Education 19(4): 670–686.

3. Sawyer AG (in press). Artificial Intelligence chatbots as a mathematics curriculum developer: Discovering preservice teachers' overconfidence in ChatGPT. International Journal of Responsibility 6(2).

4. Shapiro E, Dick L, Sawyer AG, Wismer T (2021) Critical consumption of online resources. Texas Mathematics Educator 67(1): 6–11.

5. Shelton CC, Koehler MJ, Greenhalgh SP, Carpenter JP (2022) Lifting the veil on TeachersPayTeachers. com: An investigation of educational marketplace offerings and downloads. Learning, Media and Technology 47(2): 268-287.

6. Sawyer AG, Dick LK, Sutherland P (2020) Online Mathematics Teacherpreneurs developers on Teachers Pay Teachers: Who are they and why are they popular? Education Sciences 10(9): 248.

7. Bill and Melinda Gates Foundation (2014) 'America's teachers on teaching in an era of change' Primary sources, 3rd Edition.

8. Sawyer AG, Dredger K, Myers J, Barnes S, Wilson DR, et al. (2020) Teachers as curators: Investigating elementary preservice teachers' inspiration for lesson planning. Journal of Teacher Education. 9(1): 1–19.