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Rhetorical Analysis in the Field of Education Technology

Advancements in technology often permeate through every aspect of society. Technological advancements lead to advancement in other fields, such as engineering, computer science, and education. In his paper, George Gadanidis discusses how mathematics education, artificial intelligence, and computational technology interact in classrooms (Gadanidis, 2016). I chose this paper because I grew up around teachers. My grandmother used to teach elementary school, my aunt is currently a teacher, and my sister is studying to work in education. This paper felt like the natural intersection between my major in applied mathematics and my appreciation for education. This rhetorical analysis will focus on the strategies Gadanidis uses to effectively convey the results of his research.

Gadanidis is a professor of Education at Western University. He is the department chair of Curriculum Studies and Studies in Applied Linguistics. Gadanidis has multiple areas of expertise in the field of education. He has knowledge in mathematics education, computer science education, E-Learning, computational thinking, and elementary education (Western Education, n.d.). Gadanidis also has experience working in elementary school classrooms. He often collaborates with teachers to make mathematics/computer education more dynamic and accessible for K-8 students (Research Ideas, n.d,).

In his paper, Gadanidis states, “The purpose of this paper is to examine the intersection of artificial intelligence (AI), computational thinking (CT), and mathematics education (ME) for young students (K-8)” (Gadanidis, 2016, p. 1). Gadanidis has also collaborated in the past with K-8 teachers in order to “design cool ways of engaging the young children with big math ideas” (Research Ideas, n.d.). We know that Gadanidis’ area of focus is education, and he has worked with K-8 teachers in the past, so his audience is likely teachers who teach K-8. Also, the language used in the paper would be suitable for a teacher. Gadanidis references ideas a teacher would be familiar with. For example, Gadanidis states, “Egan (2002) notes that “Piaget’s ideas and overall approach absolutely dominate in education” (Gadanidis, 2016, p. 5). Jean Piaget is a famous psychologist who greatly contributed to the field of child cognitive development. Many teachers would be familiar with Piaget and his research, as his research helped transform the primary school curriculum.

Gadanidis makes it clear throughout his paper that he believes AI, CT, and ME are important in classrooms he and wants to improve the way they are incorporated. With a growing demand for STEM-related jobs, it is important to start implementing these ideas early in a student’s career. By analyzing the overlap between AI, CT, and ME, Gadanidis is providing new conditions and tools for better incorporating these ideas in a classroom. Gadanidis made this explicit when he stated “At the same time, as discussed above, there is a growing industry focus on AI. These phenomena are not distinct or separate” (Gadanidis, 2016, p.5). The phenomena “discussed above” is the increasing implementation of AI, CT, and ME in Canadian classrooms. The driving factor in Gadanidis performing his research was the growing demand for STEM-

related jobs. The growing demand for STEM-related jobs calls for the implementation of AI, CT, and ME in classrooms, which Gadanidis explores in his research.

Gadanidis' research paper doesn't follow any conventions. It has an abstract, which is included in order to structure the paper and give the reader a sense of what the research paper will be about. The paper's abstract mentions the methods, results, and discussion, but the paper itself does not follow IMRaD. Like IMRaD, Gadanidis' paper starts with an introduction but does not follow up with the methods. Gadanidis proceeds to define AI and CT, and how they are implemented in classrooms and then proceeds to discuss the intersection between AI, CT, and ME and the similarities they share. He discusses the importance of the results in the conclusion. The way Gadanidis organized his paper is beneficial because in writing the paper, he wanted to examine the similarities of AI, CT, and ME. It would be much more beneficial to define what these terms are, and the way they are implemented, rather than to discuss the methods that were used to collect the data.

Gadanidis mainly employs ethos to convey the results of his research. Ethos is used on the first page and throughout the paper. On the first page, Gadanidis places his name, as well as the university which he works for. This establishes Gadanidis as a knowledgeable and trustworthy source. Gadanidis references a lot of other authors and bodies of work in order to support his conclusion. The choice to implement multiple authors and bodies of works makes his conclusion seem more supported and unbiased. Gadanidis also uses language that is appropriate for the subject of his paper. Referencing concepts such as Logo programming and sociocultural perspective and referencing figures such as Jean Piaget and Seymour Papert helps further establish himself as a knowledgeable and trustworthy source.

Gadanidis mentions that many students see mathematics as something "completely divorced from real life, from discovery, and from problem-solving" (Gadanidis, 2016, p. 4). I agree with this statement and have even felt the same a few times myself. I would find myself wondering how anything I learned would translate to real-life. After reading this article, I have a better understanding of how AI, computational thinking, and mathematics are used in real life. The example Gadanidis gives to demonstrate the intersection of these three concepts is the development of a self-driving car. A self-driving car must be inherently intelligent; it can't be programmed for every possible scenario, so it has to be able to make choices and learn. Mathematics is the underlying foundation of the car-building process. The disciplines employed to build a car, such as engineering and finance, are all based on mathematics. Computational thinking is used to conceptualize and actualize the car. This research paper made me realize that the connection between these three concepts can be found in more places than I initially believed.

References

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