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Rhetorical analysis of Augmented Reality Based learning research.

In this paper I will complete a rhetorical analysis on research done by individuals in the engineering department at Chitkara University Institute of Engineering and Technology India (**Tuli et al., 2022**). In the research the authors basically talk about how Technology as of the 21st century has played an integral role in not only day to day life but also in the development of the educational system. The authors go into detail explaining that a lot of current curriculum is based on technology, technology like laptops or tablets allow students an easy access for information anytime, anywhere in addition to online multimedia materials software to complete class work and collaborative software that allows individuals the option of distance learning. This was made prevalent during the pandemic as people were stuck inside and the increasing need to make new ways to allow for a classroom environment without physically being there. This period led the way snowballing in many different avenues, pushing individuals to seek more and more ways to integrate new technology along with optimizing it for learning. That's where the idea of Augmented Reality based learning started to actually be considered as something worth doing when before it may have only been something of imagination. A newer advancement in technology that allows its users the ability to visit remote areas and encounter ancient civilizations or dinosaurs and much more aiding in the learning experience all with the use of a headset and click of a button.

The audience of this research is geared towards engineering students, preferably ones who are taking laboratory courses. The article (**Tuli et al., 2022**) states that the goal of the experiment documented in this research is to develop an augmented reality that will aid in teaching students engineering concepts while also giving the conductors of the research a chance to observe the effects that this type of learning may have. In the research they conducted an experiment to gauge the effectiveness of this concept using 107 first year engineering students and separating them into two categories: control group and experimental group. The control group has 53 students learning engineering concepts using the standard methods and techniques and the other 54 learning using this new augmented reality.

The authors of this research and conductors of this experiment are Gurunjinder Singh an assistant professor in the Department of Electronics and Communication Engineering at Chitkara University Institute of Engineering and Technology, in addition as sub authors there is Archana Mantri, Shivam Sharma Ab and Neha Tuli who can be assumed to be engineering major upperclassmen of the same university aiding the assistant professor in the study. I assume this because they aren't given any titles on their author profile yet still seem adept and comfortable speaking on this topic. They also offer examples during the research that showcase that they are experienced and familiar with doing experimental research.

Although this research may not be driven by urgent need, the conductors of the research go into pretty good detail into why this would be a useful tool in education. One reason being is it would lead to a revolution in the process of learning and applying abstract concepts. In the words of the author " Incorporating technology in education also helps students to visualize engineering concepts in a multi- dimensional way to better interpret knowledge". (**Tuli et al., 2022**).

What can be inferred from the paper after carefully looking at it is that the genre would fall under the category of persuasive, informative revolutionary appeal of new education methods and technology. I say this because the whole work was made to make people see that this new way of learning would be beneficial and worth investing time and resources in, to sell the idea. They used professional language, didn't use too much jargon so the reader could easily grasp the concept yet still made the idea fun by giving examples to open our imagination to the possibilities and peak our interest. They also backed up their side by using many reputable sources who align similarly in view to them making their argument for this augmented reality learning seem like a tangible and reasonable thing. In the research paper the authors also employed the use of the ImRad writing structure which is when writers conducting experiments have four main sections in their literary work these sections being the Introduction, Methods, Results, and Discussion. This structure creates a flow of information necessary for individuals reading to access the facts and formulate their own opinion on the matter with the introduction informing the reader on the topic while the Methods and Results showcase why the thing being done is practical while also giving a blueprint for others interested and finally the the discussion for readers to see others ideas on the topic which could inspire the reader into coming up with their own.

In the research the use of both Ethos and Logos is employed. Like said before the author throughout the research uses paraphrases from multiple different peer reviewed sources to back the argument to have augmented reality employed into learning. They do this by inconspicuously integrating writing what was said by these other authors and using intext citation so the reader knows where it's coming from. This displays the use of Ethos as ethos is when an individual uses coinciding opinions of others with prestigious and high stature backgrounds pertaining to the thing they are talking about to make their argument more valid. The author also uses data from both their own experiment research in addition to other peer reviewed experimental data explaining the logic and theory behind the use of augmented reality in education which is an appeal to Logos. Logos being the use of logic and reasoning to strengthen an argument.

Throughout the analysis of this research I found that the authors did well to tick off all the categories listed above. They went into great detail about their topic solidifying their argument through many of the Writing for engineering concepts taught in class. They kept me intrigued by the use of examples and the fact that they have so many sources from other individuals in the field of engineering who also believe this is the future of learning. As an aspiring engineer they sold their mock research well to me and I believe it would have the same effect on others. I personally would invest in this new form of learning if I had the resources to do so.

References:

Tuli, N., Singh, G., Mantri, A., & Sharma, S. (2022). Augmented reality learning environment to aid engineering students in performing practical laboratory experiments in electronics engineering. Smart Learning Environments, 9(1), NA.

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