Closing the gender gap in STEM careers: fighting stereotypes of girls with VR

Review

Comments

This paper addresses an important and timely topic: the persistence of gender-based stereotypes in STEM education, particularly during adolescence. It provides a well-structured overview of developmental, cognitive, and sociocultural factors contributing to gender disparities, especially in spatial reasoning. The paper also explores the potential of emerging technologies, such as virtual reality and AI-assisted intercultural exchanges, to mitigate these disparities. However, I suggest the author consider several segments for improvement to enhance the clarity and impact of the work:

- I propose revising the current title to *Fighting STEM Stereotypes in Adolescence: The Role of Spatial Skills, Identity, and Digital Interventions*, as it more accurately reflects the central themes of the paper, including the developmental challenges of adolescence, the impact of gendered spatial abilities, and the potential of emerging technologies to promote equity in STEM education.
- While this is primarily a review paper, some interventions are only briefly referenced. Adding more concrete examples (e.g., duration, population, outcomes) would strengthen the reader's understanding of efficacy
- While the focus on Western countries is understandable, a deeper exploration of the educational or sociocultural practices in countries where girls outperform boys in spatial reasoning (as mentioned) would add valuable contrast.
- The paper notes that some interventions have only short-term effects. I recommend placing more emphasis on strategies for sustaining change.