

Abstract Submitted
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Reducing student fear of vector addition by concentrating on superimposed axes¹ A. E. TABOR-MORRIS, Georgian Court University, Lakewood, NJ — Introductory physics students often express fears regarding graphical vector addition. Student trepidation is often rooted in the possibility that, when moving the second vector to its new position at the head of the first vector, one will make a mistake and inadvertently rotate or accidentally elongate or truncate the second vector. The subtly different method presented here instead concentrates student effort on using ‘sensing personification’ to identify a “center of the universe” position that shifts for each vector. This is achieved by concentrating on considering the initial axes choice when drawing the first vector, then superimposing a new axes for the second vector onto the same graph at the head of the first vector before drawing in the second vector. The second vector then is placed to-scale onto the new axes. A simple example is given to demonstrate this alternative method and also how it better aligns with analytical vector addition which uses vector equations. Use of personification in vector addition can also set the stage for its use in other physics problem the student will encounter later such as remembered experiences on playground equipment and amusement park rides.

¹Reducing student fear of vector addition by concentrating on superimposed axes

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