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Pilot Study on Alternative Pictorial Representations and Supporting Text of Sound Standing Waves of Air Columns in a Pipe LIANG ZENG, The University of Texas-Pan American, CHRIS SMITH, JENNIFER RODRIGUEZ, EDGAR CORPUZ — Alternative pictorial representations of sound standing waves of air columns in a pipe were drawn for the first three harmonics in an open-open pipe as well as in an open-closed pipe. Supporting text describing air molecule motion over time was also provided. These pictorial representations and supporting text were designed to reveal the main characteristics of the physical mechanisms of sound standing waves of air columns in pipes. Through a pilot study utilizing surveys and interviews, we validated our design and investigated the differences in the effects on student learning of underlying physics concepts between the new design and the existing one in an introductory physics textbook. The implications of our results for teaching were discussed.

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