



TECHNOLOGY USE IN SECONDARY CHEMISTRY AND PHYSICS CLASSROOMS IN KENTUCKY

Justin Elswick, Undergraduate Research Fellow

Dr. Lesia Lennex, Department of Middle Grades and Secondary Education



Introduction

As the presence of technology grows, so does its importance and usefulness to chemistry and physics education. Research has shown that technology use at home and at school is directly correlated to student performance. (Delen, Bulut, 2011) This study focused on how technology is being used in secondary chemistry and physics classrooms across Kentucky and its perceived classroom effects.

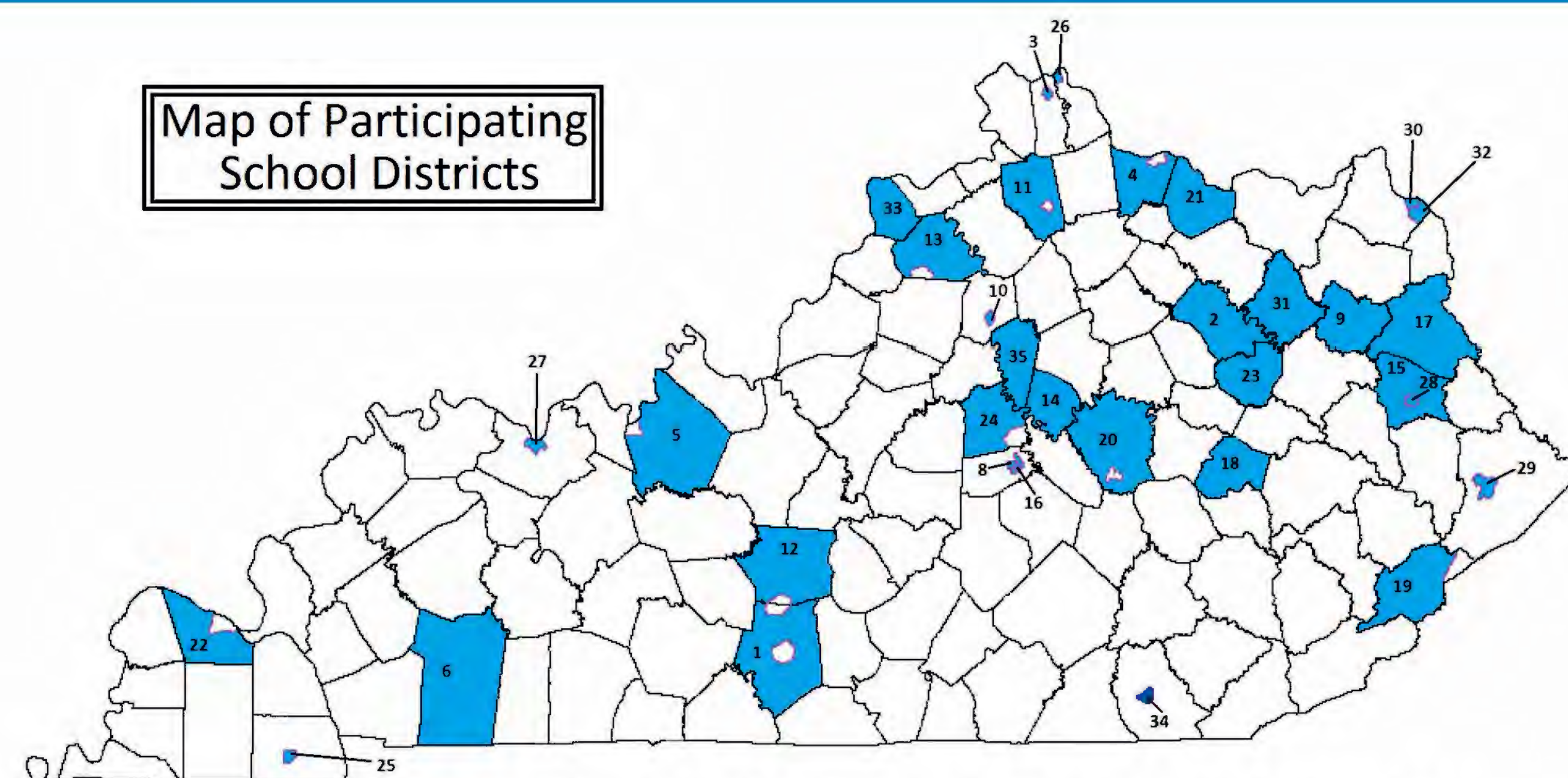
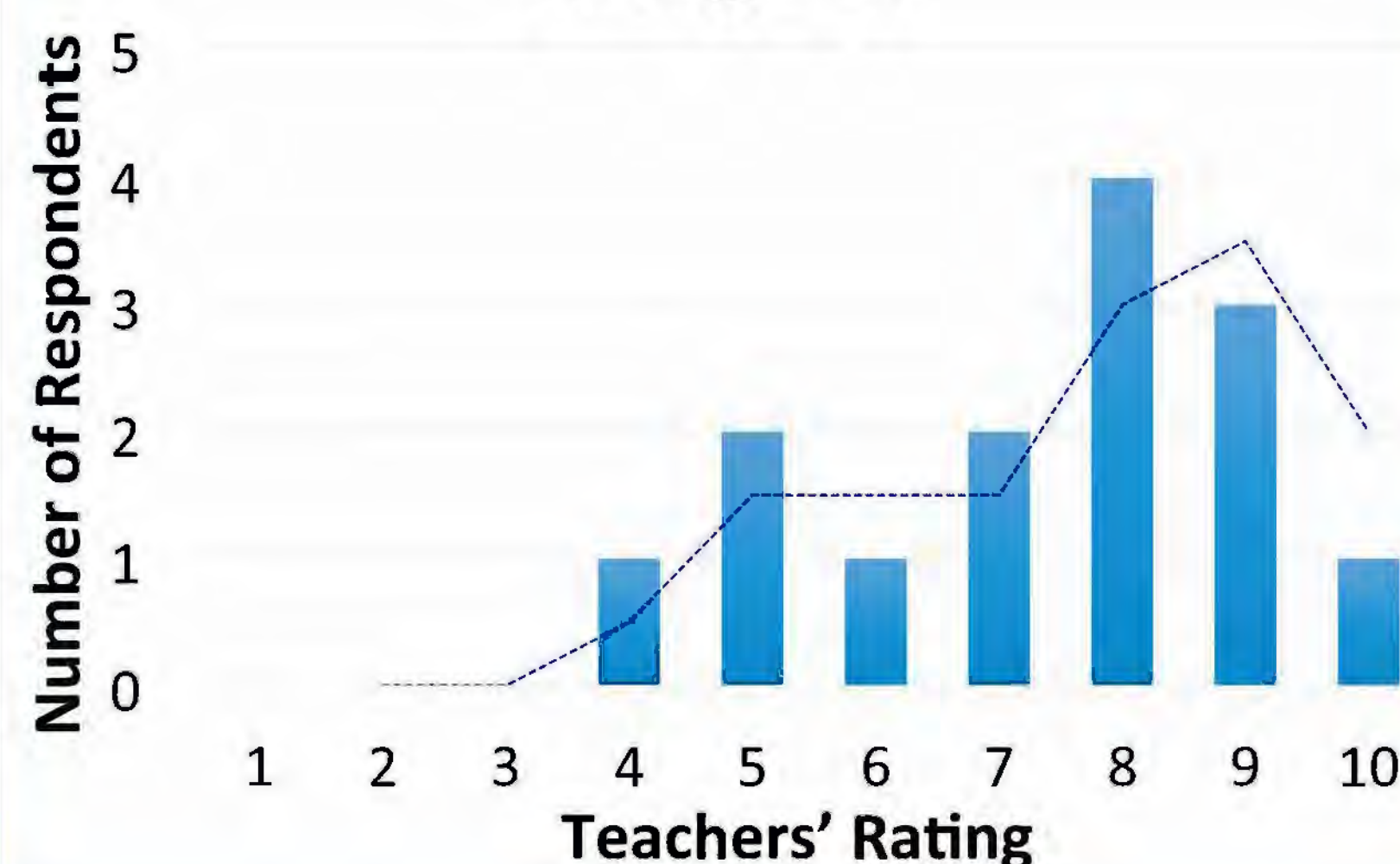


The Study

Using SurveyMonkey, 78 secondary chemistry and physics teachers across 35 districts in Kentucky were asked about the different kinds of technology they used in their classrooms and in what ways they used that technology. The study had a return rate of 22% (N=17).

The teachers reported that they used a variety of different technologies in their classrooms, including SMARTboards, cell phones, tablets, and lab equipment. Teachers had an overall positive attitude toward technology use in instruction, but many noted the potential for it to be a distraction for students.

Student Receptivity to Technology Use In Instruction; Rating 1-10



Special thanks to all participating school districts:

- | | | | |
|---------------------------|---------------------------|----------------------------------|------------------------------|
| 1. Barren County | 10. Frankfort Independent | 19. Kentucky School for the Deaf | 28. Paintsville Independent |
| 2. Bath County | 11. Grant County | 20. Madison County | 29. Pikeville Independent |
| 3. Beechwood Independent | 12. Hart County | 21. Mason County | 30. Raceland Independent |
| 4. Bracken County | 13. Henry County | 22. McCracken County | 31. Rowan County |
| 5. Breckinridge County | 14. Jessamine County | 23. Menifee County | 32. Russell Independent |
| 6. Christian County | 15. Johnson County | 24. Mercer County | 33. Trimble County |
| 7. Cloverport Independent | 16. Lawrence County | 25. Murray Independent | 34. Williamsburg Independent |
| 8. Danville Independent | 17. Lee County | 26. Newport Independent | 35. Woodford County |
| 9. Elliott County | 18. Letcher County | 27. Owensboro Independent | |

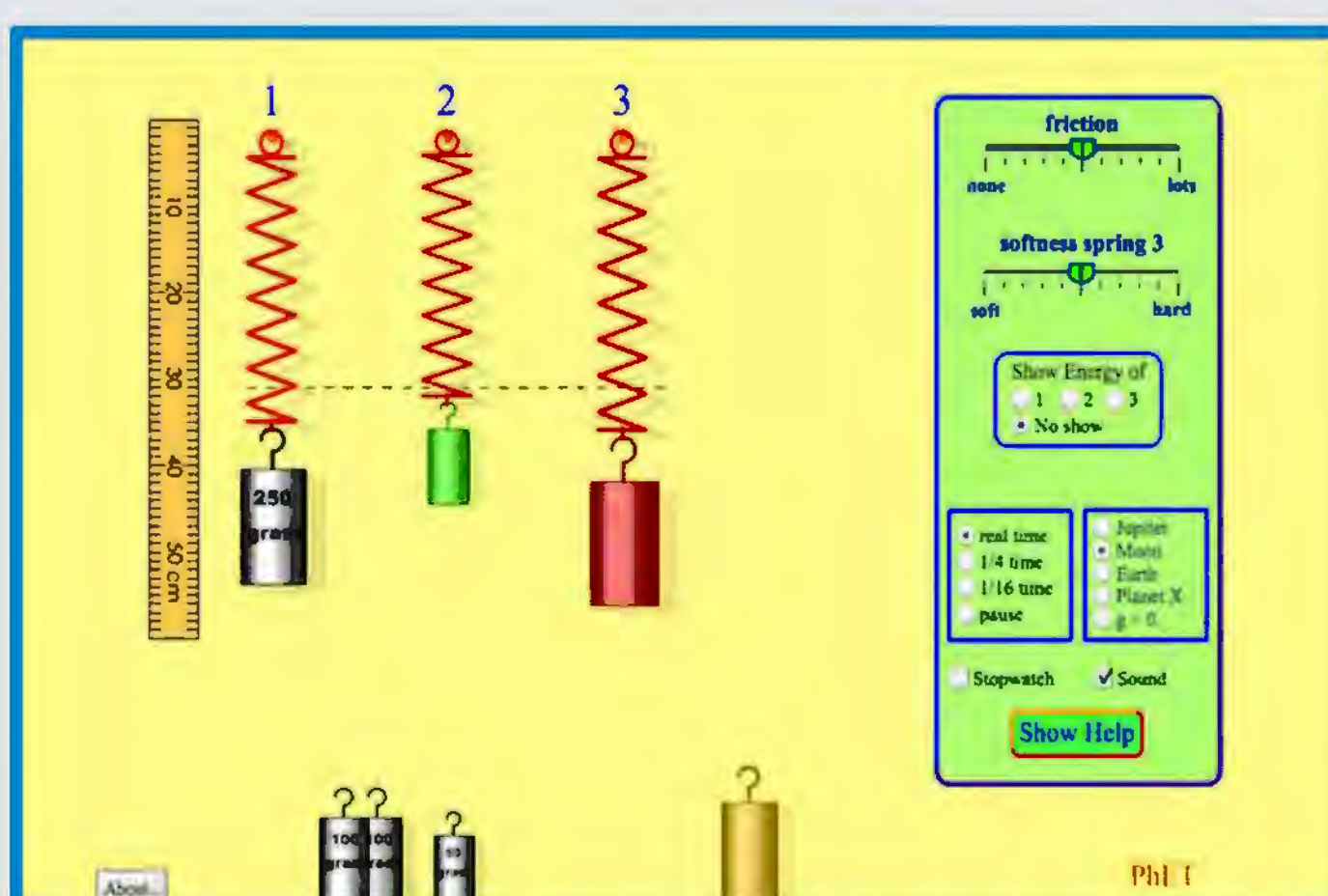
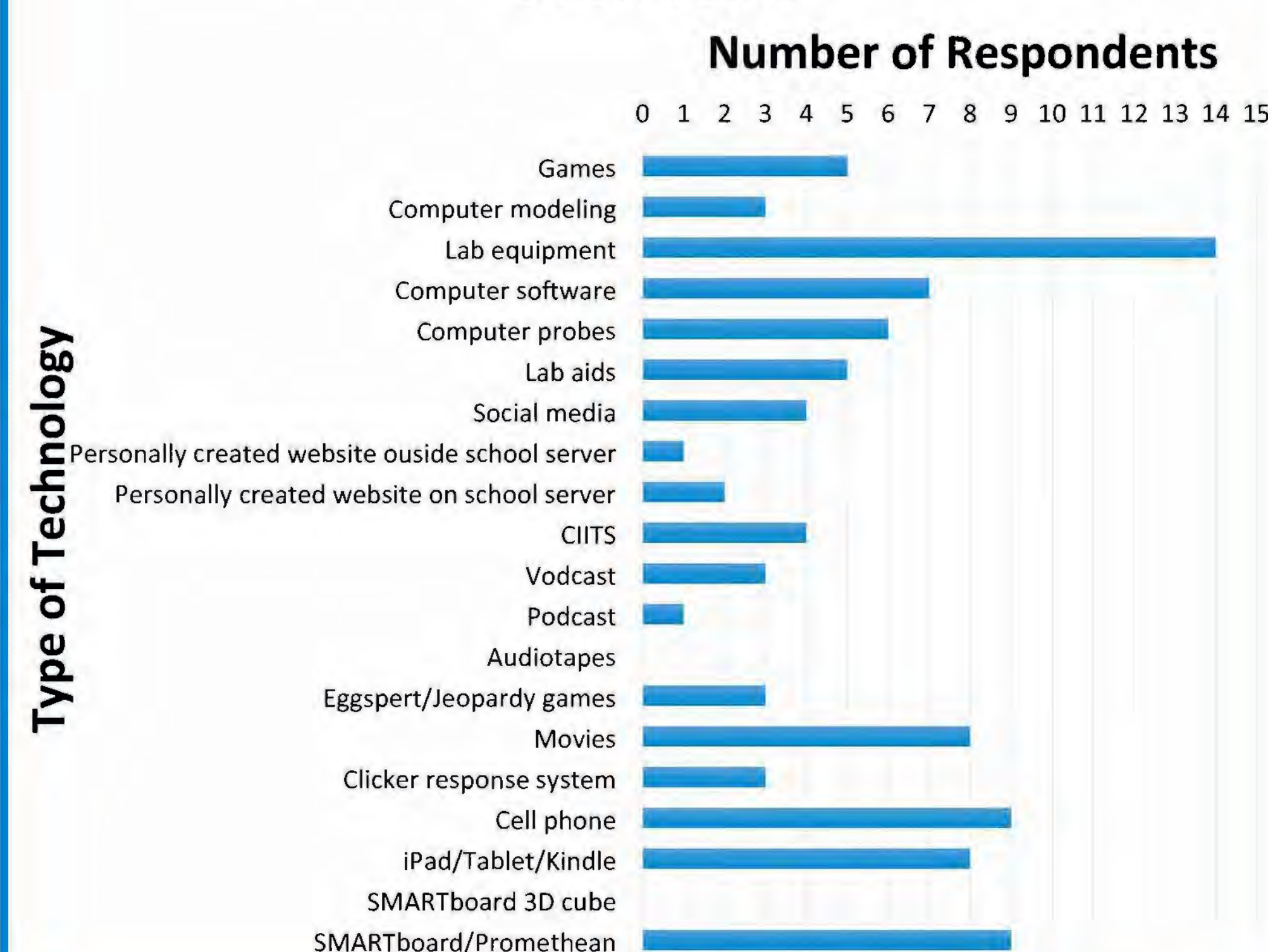


Image of an online PhET physics simulation, which several teachers in this study reported using in class.

Image credit: PhET Interactive Simulations, University of Colorado Boulder, <http://phet.colorado.edu>

Types of Technology Used In Teachers' Classrooms



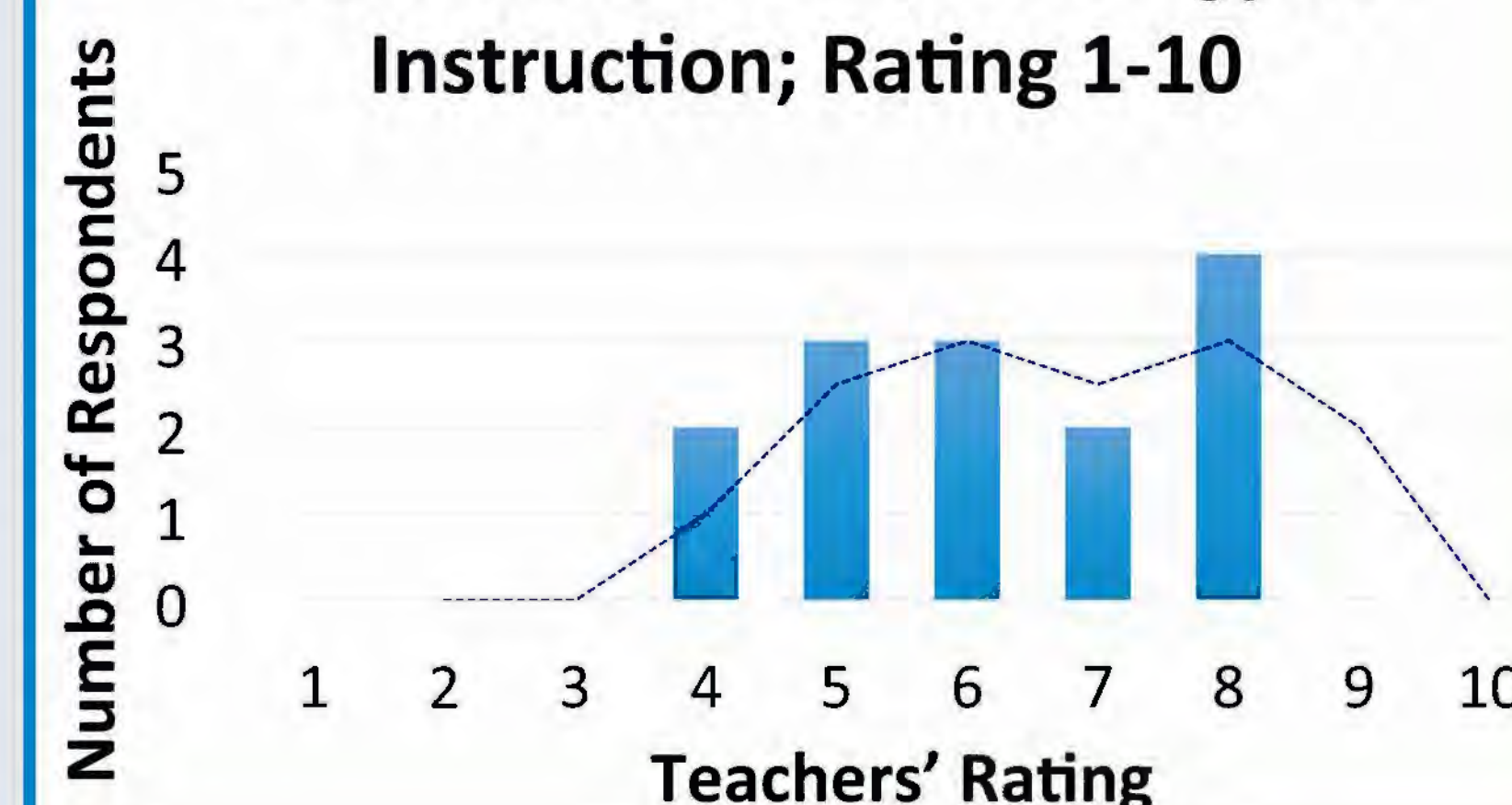
Proposed Dissemination

Proposed conference proceedings:

- Fall 2016: E-Learn, an AACE (Association for Advancement in Computing Education) conference
- Spring 2017: SITE (Society for Information Technology and Teacher Education), an AACE conference

Teachers' Perceptions

Teachers' Perception of Their Personal Use of Technology in Instruction; Rating 1-10



Teachers' Quotes

"I like using technology in class but I feel that it distracts some students."

"As a teacher, I use technology to access, create and format study tools for students, which they then complete using paper and pencil. Students have requested that I put review questions on Quizlet as a study tool, and I will do this before the final."

"For the most part we use the technology as part of the STEM program to help students to fulfill the technology part of the curriculum."

References

Amaral, K. E., Shank, J. D, Shibley, Jr., I. A., Shibley, L. R., (2013). Web-enhanced general chemistry increases student completion rates, success, and satisfaction. *Journal of Chemical Education*, 90, 296-302.

Delen, E., Bulut, O. (2011) The relationship between students' exposure to technology and their achievement in science and math. *The Turkish Online Journal of Educational Technology*, 10(3), 312-317.

Montelongo, J. A., Herter, R. J. (2010) Using technology to support expository reading and writing in science classes. *Science Activities*, 47, 89-102.