



**Impact of Discovery Education’s Science Techbook in
Rock Hills District Schools 4th Grade Students
March 2014**

EXECUTIVE SUMMARY

Background

During the 2012-2013 school year, Discovery Education’s Science Techbook TM was piloted in elementary schools located in Rock Hill School District Three of York County, South Carolina. All K-5 teachers were provided with professional development training on the use of Science Techbook but were left free to decide whether or not they would use Science Techbook in their classrooms. Merola Research was engaged to design and implement a research study to determine the impact the use Science Techbook has on student achievement.

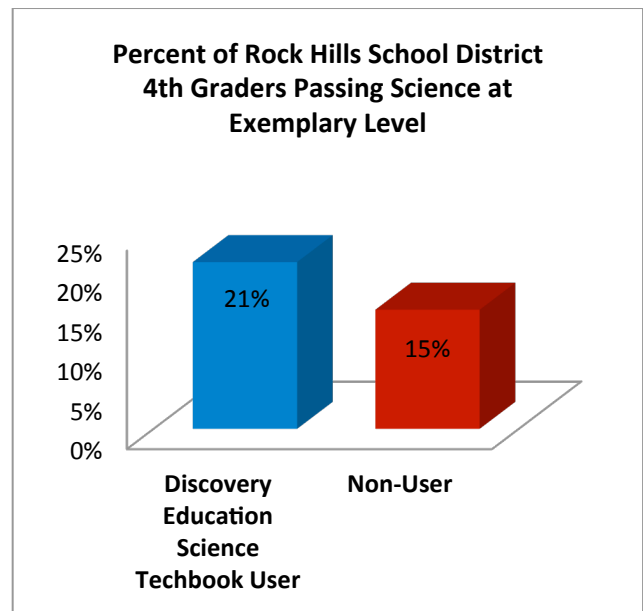
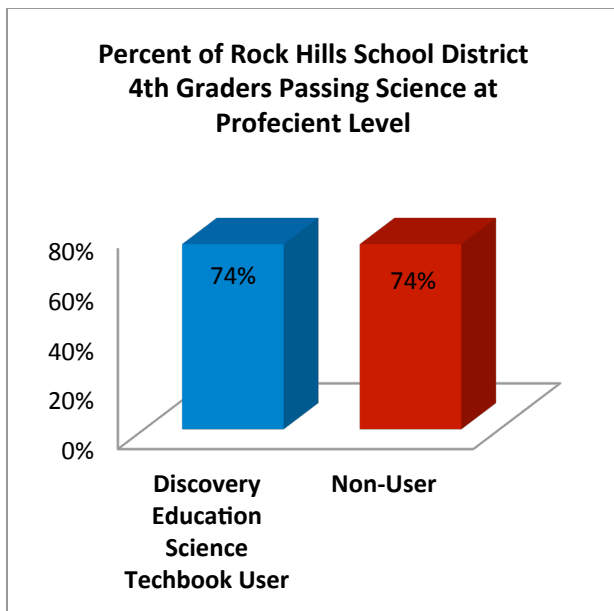
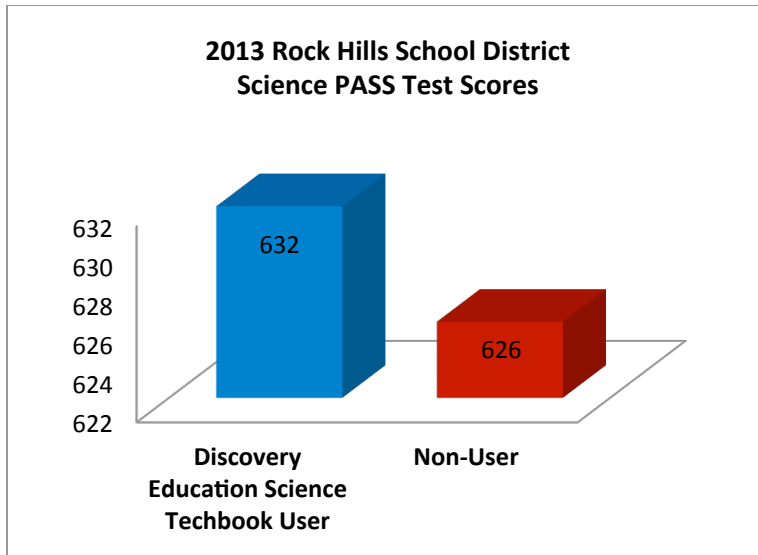
Merola Research analyzed data from the 2013 Science Palmetto Assessment of State Standards (PASS) in science for fourth-grade students to identify differences in student science achievement among those using and not using Science Techbook:

- Students were placed into comparable groups using propensity score matching.
- Students were matched on 2012 Math PASS scores, gender, ELL, Special Education, race, Free or Reduced Price Lunch status, teacher years of service and teacher certification.

Conclusion

After one year of implementation in Rock Hill Schools, fourth grade students whose teachers used Discovery Education Science Techbook scored higher on average on the 2013 Science PASS than students whose teachers did not use Science Techbook.

Results indicate that, on average, students of teachers using Discovery Education Science Techbook and teachers not using Science Techbook scored at or above the *Proficient Level* on the 2013 Science PASS at similar rates. However, students in classrooms using Science Techbook were more likely to score at or above the *Exemplary Level* performance than students in classrooms not using Science Techbook.



ABOUT DISCOVERY EDUCATION K-8 SCIENCE TECHBOOK

Discovery Education Science Techbook™ is a digital instructional resource that incorporates virtual labs, explorations, e-books, digital images, audio clips, video clips, songs, and an interactive glossary to enable teachers to implement lessons that are aligned with the states' science standards, engage students and address different learning styles. The Science Techbook includes a real-time assessment component that helps teachers monitor individual and class mastery of the content, and provides targeted remediation resources for students in need of additional support.

The 5 E Instructional Model

Science Techbook approaches the learning of scientific thinking and practice through a 5E inquiry model of instruction that is centered on essential questions in science and culminates with a scientific explanation. The BSCS 5E Instructional Model or the 5E, consists of five phases: Engagement, Exploration, Explanation, Elaboration, and Evaluation.¹ During the engagement phase, instructors assess the prior knowledge of their students and help them become engaged with new material through short activities. Students in the Exploration phase perform activities designed to provide them with a common understanding of current concepts, processes and skills. In the Explanation phase, students demonstrate their understanding of material learned during the Engagement and Exploration phases. In this process, teachers introduce a concept, students explain their understanding of it, and then teachers can provide additional Explanations. During the Elaboration phase teachers work with students to challenge their understanding and deepen their knowledge through new experiences. Finally, in the Evaluation phase, teachers evaluate student progress and students assess their understanding of the material.

Professional Development

To facilitate teachers' adoption of the Science Techbook, Discovery Education provided professional development activities that built teachers capacity to (a) navigate the Science Techbook website; (b) employ the 5E model of instruction in their classrooms; (c) create student-centered classrooms that incorporate the use of learning labs; and (d) use Science Techbook to differentiate instruction for students with different learning styles and needs. Professional development training activities also allowed teachers to develop activities that allow students to explore the resources available within Science Techbook on their own.

Discovery Education's Science Techbook was piloted in grades K-5 in Rock Hill School District specifically to increase students' and teachers' proficiency in the use of technology and increase the use of inquiry-based instruction in STEM instruction.

¹ Bybee, R.W., Taylor, J.A., Gardiner, A., Van Scotter, P., Powell, J.C., Westbrook, A., & Landes, N. (2006). *The BSCS 5E Instructional Model: Origins and Effectiveness*. Retrieved on May 10, 2013 from [http://science.education.nih.gov/houseofreps.nsf/b82d55fa138783c2852572c9004f5566/\\$FILE/Appendix%20D.pdf](http://science.education.nih.gov/houseofreps.nsf/b82d55fa138783c2852572c9004f5566/$FILE/Appendix%20D.pdf).