Chapter 13
Taking Elementary Document Camera Use to the Next Dimension

Nancye W. Blair
The Schools of McKeel Academy, USA

EXECUTIVE SUMMARY

The world's first stereoscopic 3D document camera, the 3D Ladibug, is quite unique in its ability to facilitate an interactive and constructivist implementation of stereoscopic 3D content in the elementary classroom. By harnessing the 3D Ladibug's dynamic capabilities, teachers and students are able to enhance lessons with custom-designed learning activities in science, mathematics, literacy, and other curriculum areas. Moreover, through a blend of anaglyph and full-color stereoscopic 3D images, students are able to translate this technology into applications with print media, video editing, and live-action presentations. In the pilot implementation, educators have observed increases in student excitement, engagement, attention span, learning gains, and the ease of instruction using manipulatives with young students. Additionally, the ability to custom create 3D curriculum has made distinct differences in the motivation for students to design working models and products that demonstrate a deeper understanding of concepts. Likewise, teachers were inspired to integrate an increased number of visual aids and hands-on activities into class activities when using this tool. Through its traditional 2D document camera functionalities and added stereoscopic 3D capabilities, the 3D Ladibug Document Camera proved to be a highly effective teaching tool, captivating students and teachers by breathing life into classroom models, manipulatives, and presentations.

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ORGANIZATION BACKGROUND

The pilot implementation of the 3D Ladibug Document Camera took place at a public charter school, McKeel Elementary Academy. Established in 2003, McKeel Elementary Academy provides a technology-infused education for 348 students in kindergarten through fifth grade. The student body consists of 75.1% Caucasians, 13% Black or African American, 8.4% Hispanic or Latino, 1.4% Asian, 0.3% American Indian or Alaskan Native, and 1.7% with more than 1 race. Socio-economically, 75 of the students are on the free lunch program and 22 of them receive reduced-price lunches. There are three classes for each grade level, with 18 students in each class from kindergarten through third grade and 22 students in each class from fourth through fifth grades. Generally, each class has a similarly diverse make-up. Nearly all of the students have access to some type of technology tools at home. Each year since its inception, McKeel Elementary Academy has been recognized as an "A" school for high student achievement and learning gains.

SETTING THE STAGE

McKeel Elementary Academy prides itself on its innovative educational strategies and the integration of technology into the classroom. Each of the eighteen general education classrooms is equipped with a teacher laptop, at least one desktop computer, a projector, and an interactive whiteboard. Students in grades one through five have additional access to netbooks for use in a variety of activities during their general education classes. McKeel teachers and students alike are comfortable with the regular use of technology in their classrooms. Moreover, the institution promotes efforts toward the experimentation with, and the early adoption of, emerging technologies. Empowered by the administration, the teachers involved in the pilot were able to implement the tool in a variety of contexts and formats in order to develop preliminary best practices. This instructional freedom was instrumental in the success of the pilot implementation of the 3D Ladibug document camera prototype.

As Technology and Gifted Specialist, I spearhead the technology instruction and integration at McKeel Elementary Academy. Among other responsibilities, I teach weekly technology classes on technology skills and multimedia creation for all McKeel Elementary Academy students, facilitate a project-based pull-out program for gifted students, and provide a broad range of professional development and technical support for the instructional staff. I served as the project developer and lead teacher for the 3D Ladibug document camera implementation, using the camera with my own classes, as well as training, co-teaching, and developing lessons with the other classroom teachers involved in the pilot. Prior to using the 3D