**Tech Integrated Projects**  Laura Smith, Downtown Elementary, Memphis City Schools

**Research: 5E Learning Cycle**

| **Engagement** | Object, event or question used to engage students.  
|               | Connections facilitated between what students know and can do. |
| **Exploration** | Objects and phenomena are explored.  
|               | Hands-on activities, with guidance. |
| **Explanation** | Students explain their understanding of concepts and processes.  
|               | New concepts and skills are introduced as conceptual clarity and cohesion are sought. |
| **Elaboration** | Activities allow students to apply concepts in contexts, and build on or extend understanding and skill. |
| **Evaluation** | Students assess their knowledge, skills and abilities. Activities permit evaluation of student development and lesson effectiveness. |

Adapted from Bybee, R.W. et al. (1989).

Using technology in the 5E Learning Cycle

1. **Engagement**
   - ★ Watch a video: Discovery Education, WatchKnow, TeacherTube, National Geographic Kids—*Looks like: Teacher presenting video, students taking notes and/or discussing*
   - ★ Listen to an audio story: Discovery Education, Storynory—*Looks like: Teacher presenting audio story and asking questions*
   - ★ View a presentation: Powerpoint, Google Presentation—*Looks like: Teacher presenting in order to facilitate connections to prior knowledge*
   - ★ Look at an interactive atlas: Discovery Education, Google Maps—*Looks like: Teacher and students manipulating interactive atlas to view and discuss area of study*
   - ★ Look at photos: Discovery Education, Nettrekker, National Geographic Kids—*Looks like: Teacher displaying digital images for viewing and discussing*
   - ★ Make a bubble map: Bubbl.us, Freemind—*Looks like: Students using computer to make a bubble map, or teacher creating bubble map with input from students*

2. **Exploration**
   - ★ Search for information: Nettrekker, Boolify, Kidsclick—*Looks like: Students individually or in groups using keyword searches or searching by topic for information*
   - ★ Follow links for information: Discovery Education assignment builder, Netvibes—*Looks like: Students going to webpage created by teacher and following already links to “teacher approved” resources.*
   - ★ Collect information: Wikispaces, Notestar, MSWord—*Looks like: Students are taking notes in a word processing program, online notepad, and/or collaboratively compiling information collected on a wiki*
3. Explanation

★ Summarize information: MSWord, Google Docs, Nota, Edublogs, Wikispaces—Looks like: Students are writing summaries in a word processing program, responding to questions and participating in discussion on a blog, creating a collaborative poster (Nota), or adding summative information to a wiki.

4. Elaboration

★ Ask questions and discuss: Skype, Edublogs—Looks like: Teacher uses Skype to bring an expert into the classroom for a discussion on the topic, or students are applying concept knowledge by discussion on a blog
★ Apply concepts: QuizStar, Google Forms—Looks like: Students are taking a quiz and answering questions with some short answer or essay questions
★ Collaborate and extend: Wikispaces, Nota, Powerpoint, MSWord—Looks like: Students are collaborating to build and extend ideas on a wiki, poster, powerpoint, or word document (poster, trifold, etc.)

5. Evaluation

★ Summative assessment: Google Forms, QuizStar, RubiStar—Looks like: Teacher is giving an online assessment or grading content knowledge and/or project work with rubric
★ Self-assessment: Edublogs, MSWord, Google Forms, RubiStar—Looks like: Students are reflecting by writing a blog post or comment, or writing a reflective journal in a word processing document, or students are assessing themselves with a rubric
★ Open ended questions: Edublogs, MSWord—Looks like: Students are writing and/or answering open-ended questions in blog comments or word processing program

Creative project ideas

Digital art—Tux paint, Kerpoof, Lego Digital Designer
Videos—iMovie, Stykz
Podcast (audio recording)—Garage Band
Cartoons—Pikikids, Kerpoof, Bitstrips

Time-Savers:

NoteStar: http://notestar.4teachers.org/
RubiStar: http://rubistar.4teachers.org/
QuizStar: http://quizstar.4teachers.org/
ThinkTank: http://thinktank.4teachers.org/
PBL Checklist: http://pblchecklist.4teachers.org/index.shtml

Make a test or questionnaire with Google Forms