"Wow!" ~ Project-Based Assessment

SUMMARY

This writing team describes a project for which the activities as well as the assessments are inherently differentiated — that is, designed to challenge students with a range of learner characteristics. Using both individual and cooperative group structures, students make progress in ELA, science and social studies through a long-term project on **Animals in the Brazilian Ecosystem**. This project highlights the power of teacher collaboration and culminates for the students in a presentation to family and friends at a *Science and Literacy Fair.*

The hum of productivity heard from the third floor of Lake Avenue Elementary School in Saratoga Springs came from the 27 third-graders eagerly occupied with their Animal Books — one product of a month-long project focused on integrating ELA, science, and social studies curricula. The focus of the project was **Animals in the Brazilian Ecosystem.** The 14 boys and 13 girls, a close-knit learning community, were culturally and economically diverse and demonstrated varying achievement levels. One parent commented that "the rainforest animal unit was a highlight of the year for my daughter." Indeed, all the children in the classroom seemed to truly enjoy this research project. The parent continued:

"She '*brought her work home.*' She continued her research both by searching websites at our house and by going to the public library. She talked about her progress and shared what she had learned with anybody who was willing to listen. My daughter also created a game based on her and her friends' rainforest animals; she and her classmates often played this game during recess."

The Project

This project had several components that were completed by students on their own, as well as in groups:

- ***Student Choice*** [**Individual** Activity] Students were asked to choose a rainforest animal from a list. They were then placed, according to a best effort at meeting preferences, in groups of three students per animal on the list. Our experience, as well as the research,

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tells us that students benefit from task choice (Locke, Saari, Shaw, & Latham, 1981; Shapira, 1989).

- ***Dividing The Tasks*** [**Group** Decision] Students were asked to agree on who would write each chapter for their particular animal book. A chapter would be needed on (1) appearance, (2) habitat, and (3) living habits.

- ***Researching and Writing Book Chapters*** [**Individual** Activity with Group Discussion] Students worked on their chapters using the writing process (i.e., draft, revise, edit, conference with teacher, type final drafts). Chapters were later compiled into a book.

- ***Developing Essential Questions*** [**Individual** Activity with Group Discussion] Students were asked to develop a "deep" (or essential) question and to answer it in an essay (Jacobs, 1997; Wiggins, 2007).

- ***Creating Related "Word Art"*** [**Individual** Activity] Students were asked to develop an accurate and interesting poem or "word art" about their animal. "Word art" pictures are created by the imaginative positioning of words that students deemed significant in meaning and can be created using the help of online programs such as Wordle (*www.wordle.net*) and Word Clouds for Kids (*www.abcya.com*).

- ***Book Development*** [**Group** Activity and Product] Groups met frequently to discuss their research with one another and to create a group product: a book to share with multiple audiences. The power of collaboration proved tremendous, providing students with an opportunity to discuss facts and implications and share their discoveries with others prior to presentation of the final book project. Commenting on that design, a parent noted:

  "Not only did my child get to know her animal, but she also learned how to work with the others in her group."

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- ***3-D Representations*** **[Individual** Activity] Groups worked with the art teacher to create 3-D representations of their animal and its habitat to complement and enhance their display — ultimately to be viewed, along with their book, at the annual *Lake Avenue Elementary Science and Literature Fair*.

Students were given the following list of steps for the project:

Rainforest Animals Project

Your Task

1. Choose a rainforest animal from the list.
You will then be partnered with two other students who chose the same animal.

2. Meet with your group to divide the labor.
There are three factual chapters:

- appearance
- habitat
- living habits

Each of you will need to write ONE of those.

3. Begin researching. Use the websites we have shown you, books from the school and public libraries, and other sources you find. Take notes on the note pages you were given.

4. Meet again with your group to share notes and discuss ideas.

5. Develop essential questions. Ask yourselves: What more do I want to know or understand now that I have some factual knowledge about this animal?

6. Write. Each person will be responsible for three things:

1. A chapter of factual information.
2. An essay answering an essential question that you will ask after doing some research.
3. An extension: word art, Wordle, acrostic poem, or suggest an idea.

7. Draft, revise, edit, conference, type your final drafts.

8. Compile your finished work into a book to share with the class and the world at the Sci-Lit Fair.

- *Please note: You will also be creating a three-dimensional paper animal and habitat to accompany your book in art class.*
- *Throughout this process you will be asked to complete other tasks reporting on your progress and learning. You should feel welcome at any time to add questions, thoughts, and new understandings to the graffiti wall.*

HAVE FUN LEARNING!

Project guidelines and assessment strategies were developed by three third-grade teachers who implemented this project. In preparing for the project and designing the assessment plan, the teachers used a variety of instructional approaches (e.g., Dacey & Lynch, 2007; Fay & Funk, 1995; Fontas & Pinnell, 2006; Harvey & Goudvis, 2007; Tomlinson & McTighe, 2006). They found that performance tasks and drawing on student interests are great ways to create motivation and success. They also attended a BOCES workshop on The Inquiry Model WISE formula (Wonder, Investigate, Synthesize, Express) developed by Paige Jaeger and Mary Ratzer and named by librarian Maria Weeks (2010). The Inquiry Model includes cornerstone assessment, activates thinking, and promotes both information and media literacy in students. Most importantly, it focuses on learning skills rather than memorizing information. Twenty-first century skills, including the incorporation of various technologies and collaborative work, were included in the design. It was ***inherently differentiated*** so that students worked at their ability level at all times. It was open-ended, with no ceiling or limits for learners with unique talents.

To prepare students for success, the teacher initiated the unit with lessons on note-taking, searching for and evaluating sources of information (with emphasis on Internet resources), skimming and scanning, and how authors write to ***inform***. Students were introduced to multiple sources of information including non-fiction works as well as works of fiction which convey an important message (e.g., *The Great Kapok Tree* by Lynn Cherry). Graphic organizers were used to compare and contrast animals in various environments and explore the types of adaptations animals have made (i.e., protective adaptations for getting food).

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Assessment Approaches

This project was designed to include a variety of assessment measures linked to current standards as well as new Common Core Learning Standards (see examples on page 10, at end of article). Students were evaluated on their chapters. Targeted outcomes included whether students:

1. reported factual information in paragraph form,
2. showed a main idea,
3. used detail, and
4. wrote concluding sentences.

For their essential questions, targeted outcomes included whether students:

1. analyzed factual information to ask and answer questions, and

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2. expressed in writing and illustration an understanding of the interdependence of living and non-living things in the rainforest ecosystem.

In addition, students completed *Reflection Logs* to answer two of the teacher's essential questions posed for the unit prior to learning and again at the conclusion of the unit. These logs were assessed for growth of understanding. Students were asked:

- How do animals interact with the other living and non-living elements of their environment to form a dynamic ecosystem?
- What can we do to preserve the balance of world ecosystems?

An example of one tool for assessment of targeted outcomes was a rubric (*see below*). This relates to students' individual writing as well as an outcome on collaborative skills. In keeping with the Rainforest theme, the mastery level

Rubric for Rainforest Project

	4: Emergent Layer	3: Canopy	2: Understory	1: Forest Floor
Accurate Detail and Depth	Exceptional number of facts, vivid descriptions.	Substantial number of facts, good amount of detail.	Some facts are accurate, some detail.	Incorrect or few facts, hardly any detail.
Mechanics	Uses rich and imaginative language with 0-1 errors in grammar, punctuation, and spelling.	Appropriate choice of language with 2-5 errors in grammar, punctuation, and spelling.	Some appropriate choice of language with 5-8 errors in grammar, punctuation, and spelling.	Imprecise or inappropriate choice of language with many errors in grammar, punctuation, and spelling.
Number of Sources and Bibliography	Bibliography alphabetized and formatted correctly with at least 8 sources cited.	Bibliography alphabetized and formatted correctly (for the most part) with at least 5 sources cited.	Bibliography incorrectly alphabetized or formatted or fewer than 5 sources cited.	Bibliography missing or incorrectly formatted or fewer than 3 sources cited.
Creativity	Illustrations and word art show factual integrity, rich thought, and creativity.	Illustrations and word art are neat and colorful and reflect some fact knowledge, thought, and creativity.	Illustrations and word art are somewhat neat and colorful but reveal little evidence of fact knowledge or creativity.	Illustrations and word art are not neat and reveal inaccurate use of facts or little thought or creativity.
Growth	Reflections on pre- and post-journals show significant increase in depth of understanding of essential questions.	Reflections on pre- and post-journals show significant increase in understanding of essential questions.	Reflections on pre- and post-journals show some increase in understanding of one of the essential questions.	Reflections on pre- and post-journals show little increase in understanding in either of the essential questions.
Collaboration Skills	Worked cooperatively with each member of the group to create a cohesive, finished product with contributions from each member.	Worked cooperatively with group members most of the time to create a finished product with contributions from each member.	Needed assistance to work cooperatively with group members. Created a finished product with contributions from each member.	Struggled to work cooperatively with group members even with assistance. Created a finished product that lacked components.

is the highest layer of the rainforest: Emergent Layer. The rubric was a quick reporting tool that provided students with feedback about their performance and supplied data about areas of greatest need for individuals and the class as a whole. In response to this data, plans for review and re-teaching were made. For example, one area of need was in student understanding about the necessity for balance in order to have a dynamic ecosystem. The teacher decided to conduct a follow-up lesson in which the class explored the wolf population that had exploded in the West, the resulting imbalance, and the difficulties that caused other species.

A variety of other formative assessments were built into the experience and were designed to provide feedback for teacher and students and allow for constant progress and development. These included:

- ***Individual Conferences:*** Individual conferences were a powerful form of formative assessment. The Reflection Logs formed one component of the conference. Since not all students excel at expressing their knowledge through writing, this gave individuals an opportunity to explain their learning and add to their responses. In these conversations, the teacher was also able to answer a student's questions and clear up misconceptions. This one-to-one experience proved motivating for many students. During a conference, one student who struggles with writing exclaimed,

  "Wow! This is the best project. I have learned so much about the spider monkey, and now I want to help the rainforest."

- ***Posing Questions:*** Students posed their own questions to be answered by classmates. Questions triggered teacher and peer dialogue that not only provided important information, but also enhanced students' experience by allowing them to explain their developing understandings to one another in "third-grade language" (Nicol & MacFarlane-Dick, 2006).

- ***Tickets-to-Lunch:*** Formative exit assessments named "Tickets-to-Lunch" were used to capture student understandings following lessons and discussions. Students handed the teacher a "ticket" with the answer to a posed question as they exited for lunch. While students were at lunch, the teacher read their responses and prepared mini-lessons to complete when they returned from lunch. These lessons reinforced the new understandings of some and corrected the misconceptions of others.

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- ***Online Bulletin Boards:*** Stixy (*www.stixy.com*) was used as a collaborative online posting site to give students a forum for explaining their understandings of the interdependence of life. Students could post their thoughts and ideas via the Web and add to it as their understandings grew. This online bulletin board motivated and engaged students, and the teacher could see growth in their learning. Posts provided a window into students' thoughts and prompted classroom discussion while encouraging students to delve deeper.

- ***Graffiti Wall:*** Students filled large sheets of paper hanging on the classroom wall with answers to essential questions. This is a collaborative process as all students are encouraged to post their thoughts, and the resulting "graffiti" remains in place throughout the project (Victoria Curriculum and Assessment Authority, 2009). The graffiti wall was also utilized by the students to ask new questions as a result of their research. The teacher used these questions to inquire with individual students about their facts, help them discover the answers, and scaffold their ability to ask questions.

Due to the age of the students, teachers were sometimes skeptical that they would understand the tasks fully or truly absorb the information. The ongoing assessments, therefore, were critical to informing teachers of student progress. Formative assessments provided immediate feedback about student understanding.

This assessment collection created a portfolio of student work throughout the project and presented an overall picture of each child's growth and ability over time. Dr. Barbara Messier, the principal at Lake Avenue Elementary, commended the project saying:

> "All in one unit, students were able to explore the many layers of academic rigor that often take an entire year to teach."

Assessment information was shared with parents in a variety of ways — including through the rubrics, as well as the displays at the Sci-Lit fair. As one parent put it:

> "Having the chance to exhibit the final product at the Sci-Lit fair is an added bonus. I know that my daughter is extremely proud of what she created."

Additional Accommodations

This project lends itself naturally to meeting the needs of learners at all achievement levels (and could also work well for English language

learners). Students worked independently and received support from an adult as needed. Each student was provided with differentiated reading and research materials. The use of various websites such as *www.Pebblego.com, www.Yahooligans.com,* and WorldBook for Kids (*www.worldbookonline.com/kids/Home*) supported all learners in the research phase and created age- and achievement-appropriate digital environments in which to do their research (e.g., materials matched to reading level). The librarian offered further assistance on an individual basis seeking and ordering materials for students. Students were assessed on both their independent and collaborative skills.

Accommodations for students with special needs included, but were not limited to:

- reading with an adult,
- underlining and highlighting pertinent information,
- working in heterogeneous groups,
- assistive technology — primarily Co-Writer, a software program that interprets spelling and grammar input and offers word suggestions.

The special education teacher and a grade-level assistant worked with the heterogeneous groups in which their targeted students were members. They also used pull-out writing time to assist students receiving Academic Intervention Services and students with Individualized Education Programs. The collaborative approach to this project was a great support for all learners. Exposure to the information as well as repetition each day through multiple modalities and different adults allowed all students to better assimilate the concepts.

What We Learned Along the Way

This project faced some real-world limitations. The major constraint was the need for additional computers for all students to use for greater lengths of time. Furthermore, it would be beneficial to expand the pool of appropriate reading-level resources for future projects. We also learned the importance of ensuring adequate resources for students in the initial stages of the project, and teaching the skills they will need for research.

Final Thoughts

Assessment is so much more than scores on standardized assessments. The strategies described here provide formative information that determines next steps — allowing the teacher to respond and expand instruction. This project also provides summative data on important knowledge and

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These learners identified the profound impact of humans on the rainforest environment and suggested ideas to help solve the problem.

Examples of NYS Learning Standards Addressed through this Project

Examples include standards in place at the time this was written, as well as connections to the *New York State P-12 Common Core Learning Standards for English Language Arts and Literacy (CCLS).*

Standards in Science and Social Studies:

- Students were encouraged to ask questions and seek greater understanding from multiple perspectives. They questioned the explanations they read about and heard from others. They developed relationships among observations to construct descriptions of objects and to form their own explanations and questions (NYS Math, Science and Technology [MST] Standard 1).
- Students used technology to access, evaluate, and transfer information (NYS MST Standard 2).
- The essential questions posed and pondered by the class as a whole as well as by individuals for their books delved deeply into the interdependence of plants and animals and their physical environment (NYS MST Standard 4).
- Through their experiences with this research project students demonstrated understandings of the role geography plays in the lives of people and animals in the interdependent world in which we live (NYS Learning Standards for Social Studies Standard 3).

Standards in English Language Arts and Literacy:

- Read to take notes using differentiated templates from a variety of media, using text features and search tools to locate relevant information (CCLS RI 3.5).
- Determined main idea and detail (CCLS RI 3.2).
- Critically analyzed and evaluated text (ELA Standards 1 and 3).
- Asked and answered questions to demonstrate understanding (CCLS RI 3.1).
- Built on others' ideas, expressed their own ideas clearly, and checked for understanding (ELA Standards 1 and 3, CCLS SL 3.1).
- Wrote informative texts, developed their topics, and performed research (ELA Standards 1 and 3, CCLS W3.2, CCLS W3.7, and CCLS W3.8).
- Used word processing and technology sources to publish their work (CCLS W3.6).

skills. As essays and responses revealed, these learners identified the profound impact of humans on the rainforest environment and suggested ideas to help solve the problem. Many even took the perspective of their animals when responding to their own questions. Most rewarding were the student responses to the final products — in particular, the books they created. As they clutched their finished animal books proudly under their arms, several students were overheard discussing how this book would be on their bookshelves for years to come. The skills they developed in creating it will, no doubt, last even longer.

References

Cherry, L. (1990). *The great kapok tree.* San Diego, CA: Harcourt Brace and Co.

Dacey, L., & Lynch, J. B. (2007). *Math for all: Differentiating instruction.* CA: Math Solutions.

Fay, J., & Funk, D. (1995). *Teaching with love and logic: Taking control of the classroom.* Golden, CO: The Love and Logic Press, Inc.

Fountas, I. C., & Pinnell, G. S. (2006). *Teaching for comprehending and fluency: Thinking, talking, and writing about reading [K-8].* Portsmouth, NH: Heinemann.

Harvey, S., & Goudvis, A. (2007). *Strategies that work: Teaching comprehension to enhance understanding.* Portland, ME: Stenhouse Publishers.

Jacobs, H. H. (1997). *Mapping the big picture: Integrating curriculum and assessment K-12.* Alexandria, VA: Association for Supervision and Curriculum Development.

Jaeger, P., & Ratzer, M. (2010). *Wonder, investigate, synthesize, express.* WSWHE BOCES Library System. 1st Edition.

Locke, E. A., Saari L. M., Shaw, K. N., & Latham, G. P. (1981). Goal setting and task performance: 1969-1980. *Psychological Bulletin, 90*, 125-152.

Nicol, D. J., & MacFarlane-Dick, D. (2006). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in Higher Education, 31*(2), 199-218.

Shapira, Z. (1989). Task choice and assigned goals as determinants of task motivation and performance. *Organizational Behavior and Human Decision Processes, 44*(2), 141-165.

Tomlinson, C.A., & McTighe, J. (2006). *Integrating differentiated instruction & understanding by design: Connecting content and kids.* VA: Association for Supervision and Curriculum Development.

Victoria Curriculum and Assessment Authority. (2009). *Teaching strategies – Graffiti wall.* Retrieved from *http://vels.vcaa.vic.edu.au/support/tla/strategies.html#graffiti*

Wiggins, G. (2007). *What is an essential question?* Retrieved from *http://www.authenticeducation.org/bigideas/article.lasso?artId=53.*