

University of Northern Iowa
UNI ScholarWorks

Graduate Research Papers

Student Work

2001

Literature-based language arts extended to science

Jennifer A. Johnson
University of Northern Iowa

Copyright ©2001 Jennifer A. Johnson

Follow this and additional works at: <https://scholarworks.uni.edu/grp>



Part of the [Curriculum and Instruction Commons](#), [Language and Literacy Education Commons](#), and the [Science and Mathematics Education Commons](#)

Let us know how access to this document benefits you

Recommended Citation

Johnson, Jennifer A., "Literature-based language arts extended to science" (2001). *Graduate Research Papers*. 929.

<https://scholarworks.uni.edu/grp/929>

This Open Access Graduate Research Paper is brought to you for free and open access by the Student Work at UNI ScholarWorks. It has been accepted for inclusion in Graduate Research Papers by an authorized administrator of UNI ScholarWorks. For more information, please contact scholarworks@uni.edu.

Literature-based language arts extended to science

Abstract

A literature-based language arts program provides meaningful experiences for children within the functions of language. Such programs can be extended across the curriculum to utilize the functions in other areas. These connections across the curriculum can be enhanced through the different genres of literature.

In this article, a literature base was integrated into the science area of the curriculum. A science unit on pumpkins was developed for first grade children with quality literature and related expressive activities that extended the children's literacy and their understanding of plants. Teacher-directed activities were presented along with learning centers.

Literature-Based Language Arts Extended to Science

A Graduate Journal Article

Submitted to the

Department of Curriculum and Instruction

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts in Education

UNIVERSITY OF NORTHERN IOWA

by

Jennifer A. Johnson

April 2001

This Graduate Journal Article by: Jennifer A. Johnson

Entitled: Literature-Based Language Arts Extended to Science

has been approved as meeting the research article requirement for the
Degree of Master of Arts in Education.

May 2, 2001
Date Approved

Jeanne McLain Harms

Director of Research Project

May 2, 2001
Date Approved

Jeanne McLain Harms

Graduate Faculty Adviser

May 2, 2001
Date Approved

Rick Traw

Graduate Faculty Reader

May 2, 2001
Date Approved

Rick Traw

Head, Department of Curriculum
and Instruction

Abstract

A literature-based language arts program provides meaningful experiences for children within the functions of language. Such programs can be extended across the curriculum to utilize the functions in other areas. These connections across the curriculum can be enhanced through the different genres of literature.

In this article, a literature base was integrated into the science area of the curriculum. A science unit on pumpkins was developed for first grade children with quality literature and related expressive activities that extended the children's literacy and their understanding of plants. Teacher-directed activities were presented along with learning centers.

Children develop their thinking-language abilities and need language opportunities that are functional and meaningful (Smith, 1994). Literature experiences that provide content and models of language support children's involvement in the language processes, thus extending their literacy (Routman, 1991; Langer, 1995).

Literature can support the integration of the language arts across the curriculum (Routman, 1991). Through literature experiences, children are able to make personal connections to impersonal subject matter. The meaning that children create can be extended through themes and concepts presented in a literature-based program (Bosma & Guth, 1995).

Value of Literature-Based Language Arts

A literature-based program presents quality literature representative of the different genres in all areas of the curriculum. It emphasizes the use of reading and writing in the functions of language. Thus, when children are given the opportunity to interact with quality literature, their literacy is extended (Huck, 1996). As children are immersed in a print-rich environment with many learning options, they are encouraged to direct their own learning. Literature-based study with many learning options can foster self-esteem by encouraging children to take risks in the classroom and to explore the world around them (Harms & Lettow, 1998).

A literature-based classroom needs to be a predictable, secure environment for children. Meaningful learning activities can be presented as both teacher-directed and student-initiated. Many of the student-initiated experiences can be presented through learning centers. It is important for children to have opportunities to share the meaning they have created through the options with others (Harms & Lettow, 1998; Cullinan & Strickland, 1997).

Literature-Based Language Arts Extended to Science

The science area involves processes, as does the language arts. Traditionally, science was taught through textbooks that presented tightly packed, abstract concepts. This form of presentation was difficult for children to understand (Butzow & Butzow, 1989).

In studying science, children need to be involved in the processes. They need to learn how scientists use reading and writing to engage in the processes and how they communicate to others as scientists (Shanahan, Robinson & Schneider, 1993).

Literature experiences can support children as they engage in the science processes. Literature through a narrative form that is much easier for children to comprehend can supply content. It can assist children in combining new concepts with prior knowledge. While extending children's

literacy, literature experiences presented in the science area can enhance children's problem solving abilities – observing, inferring, interpreting, and evaluating (Butzow & Butzow, 1989; Bosma & Guth, 1995).

Implementation of a Science Concept Supported by Literature-Based Language Arts

As a first grade teacher, I developed a literature-based science unit on pumpkins and presented it to my class in the month of October. The unit was a part of the established science program on living things. The concept of pumpkins is developmentally appropriate for first grade children because pumpkins are familiar objects. They are interested in them in the month of October, as the Halloween holiday approaches.

In this unit, first graders had the opportunity to learn these facts about pumpkins:

1. Pumpkins are plants.
2. Pumpkins are fruit rather than vegetable because they have seeds.
3. Pumpkins require sunlight, water, and air to grow.
4. Pumpkins begin as seeds and grow into food that can be cooked and eaten.

This unit was extended through literature representative of the different genres and related expressive activities. The experiences were presented through teacher-directed activities and student-initiated activities.

Teacher-Directed Activities

The teacher presented several instructional activities to the students. First, she placed a pumpkin before the class. She asked the students to contribute words that were associated with pumpkins. The teacher wrote their words on chart paper to be used as a reference when students began writing in their daily journals on the concept of pumpkins. The teacher then read aloud Jeanne Titherington's Pumpkin Pumpkin (New York: Scholastic: 1986). She led a discussion about the growth cycle of a pumpkin. Picture cards and a pocket chart were used throughout the discussion to better illustrate the stages of the growth cycle. The students then made life cycle booklets of a pumpkin, using construction paper and string.

Another teacher-directed activity began with the teacher reading aloud The Pumpkin Book, by Gail Gibbons (New York: Holiday House: 1999), followed by a brief discussion on pumpkin seeds. Then, Kristine O'Connell George's poem, "Maple Shoot in the Pumpkin Patch," from Old Elm Speaks: Tree Poems (illus. Kate Kiesler: New York: Clarion: 1998), was read aloud from a chart sheet. The children were encouraged to move about the room as if they were the seed in the poem. Finally, the students were given a pumpkin seed of their own to plant in a ziploc bag with a small amount of dirt and water. The ziploc bags were hung on clotheslines by the window for sunlight so the children could observe daily growth.

In another session, Elizabeth King's The Pumpkin Patch (New York: Puffin: 1990) was read aloud. The children painted pumpkin images on white lunch bags. Then, the teacher stuffed the bags with newspaper and tied them with green yarn. The children displayed them around the classroom to represent a pumpkin patch.

The students were shown a real pumpkin and were given a teacher-made "Pumpkin Math" booklet. The teacher began the activity with a brief explanation of the term "estimation." First, students were asked to observe the pumpkin. The students estimated the distance around the pumpkin by cutting a piece of string to represent their guess. Next, the students were asked to estimate the number of vertical lines on the pumpkin. Last, the students had to estimate the weight of the pumpkin. All of the children's estimates were recorded in their math booklet. The teacher then went through each measuring activity and gave the correct answer. Students then recorded if their guesses were too much, just right, or too little. The activity ended with the children estimating the number of seeds that were inside the pumpkin that would be carved the following day.

On the following day, the teacher opened and cleaned the inside of a pumpkin before the class. The students then washed the seeds and lay them out to dry on a baking sheet. They counted the seeds and recorded their findings in the pumpkin math booklets. Again, the children had to

determine if their guess was too high, just right, or too low. The students were then asked to draw a picture of how they would like the class pumpkin to be carved (scary, mad, happy, or sad). They attached their picture votes to a large teacher-made bar graph. The expression receiving the most votes determined the one to be carved.

The dried pumpkin seeds were baked in an oven. While the seeds were baking, the class observed the teacher carve the pumpkin. The teacher completed the activity by reading Too Many Pumpkins, by Linda White (illus. Megan Lloyd: New York: Holiday House: 1996) while the students ate the seasoned pumpkin seeds.

The final teacher-directed activity was a field trip to the local pumpkin patch. Each child chose a pumpkin of their own to bring back to school. They would be used in a sustaining center activity.

Student-Initiated Activities

Literature experiences involving different genres and related expressive activities were developed to enhance the conceptual development of pumpkins. Two types of learning centers were presented in the classroom: Sustaining centers throughout the school year offered a secure, predictable learning environment; their content supported each unit. Other centers focused specifically on the study of a unit, in this case, pumpkins.

Sustaining Centers

These sustaining centers were offered: Reading/Listening, Poetry, Author/Illustrator, Museum, and Bookmaking.

- Reading/Listening Center

These books with accompanying teacher-made cassette tapes were available in the center for listening/reading experiences.

Picture Books

Arnold, M.D. (1998). The pumpkin runner. B. Sneed, (Il.), New York: Dial.

Cooper, H. (1998). Pumpkin soup. New York: Doubleday.

Hall, H. (1994). It's pumpkin time. S. Halpern, (Il.), New York: Scholastic.

Hutchings, R. & Hutchings, A. (1994). Picking apples and pumpkins. New York: Scholastic.

Johnston, T. (1983). The vanishing pumpkin. T. DePaola, (Il.), New York: G.P. Putnam's.

Kellogg, S. (1980). The mystery of the flying orange pumpkin. New York: Dial.

Kroll, S. (1984). The biggest pumpkin ever. J. Bassett, (Il.), New York: Scholastic.

Ray, M.L. (1992). Pumpkins: a story for a field. San Diego: Harcourt
Brace.

Rockwell, A. (1989). Apples and pumpkins. L. Rockwell, (Il.), New
York: Scholastic.

Rockwell, A. (1999). Pumpkin day, pumpkin night. M. Halsey, (Il.),
New York: Scholastic.

Silverman, E. (1992). Big pumpkin. S.D. Schnidler, (Il.), New York:
Scholastic.

Zagwyn, D.T. (1995). The pumpkin blanket. Berkeley, CA: Tricycle.

- Poetry Center

Poems selected from several books were presented in the center. They were copied and matted on large sheets of construction paper for children to use. Also, the students were given a copy of each poem to illustrate at the center. A teacher-made cassette tape of this collection of poems was also available in the center.

George, K.O. (1998). Old elm speaks: tree poems. K. Kiesler, (Il.), New
York: Clarion.

“Maple Shoot in the Pumpkin Patch”

Hughes, L. (1993). The dream keeper and other poems. B. Pinkney,

(Il.), New York: Knopf.

“Autumn Thought”

Katz, B. (1990). The place my words are looking for. New York:

Bradbury.

“October Sunday”

Kuskin, K. (1980). Dogs & dragons trees & dreams. New York:

Harper & Row.

“Fall”

“The Witches’ Ride”

Merriam, E. (1985). Blackberry ink. H. Wilhelm, (Il.), New York:

William Morrow.

“Up in the attic”

Livingston, M.C. (1982). Circle of seasons. New York: Holiday.

“Autumn leaves”

Prelutsky, J. (1999). The 20th century children’s poetry collection.

M. So, (Il.), New York: Knopf.

“Pumpkin Picking”

Stevenson, J. (1999). Candy corn. New York: Greenwillow.

“The Morning After Halloween”

Worth, V. (1994). All the small poems. N. Babbitt, (Il.), New York:

Farrar, Strauss & Giroux.

“Pumpkin”

- Author/Illustrator Center

Gail Gibbons was the author/illustrator featured in the center. She is known for writing many concept picture books. In the center, a biographical sketch of Gail Gibbons was exhibited. The children could listen to/read her book, The Pumpkin Book, and also some of her other books.

Selected books

Gibbons, G. (1988). Farming. New York: Holiday.

Gibbons, G. (1994). County fair. Boston: Little, Brown.

Gibbons, G. (1995). The reasons for seasons. New York: Holiday.

Gibbons, G. (1999). Pumpkins. New York: Holiday.

- Museum Center

After participating in the teacher-directed field trip, the students were given paint, markers, yarn, and other materials to decorate their pumpkins to be displayed in the “Pumpkin Museum.”

- Bookmaking Center

Each student assisted in designing a page for a class book on pumpkins. The children were given a small pumpkin shape that was cut from orange construction paper and story paper. They were asked to turn the shape into something other than a pumpkin, using illustrations (e.g., a balloon, a basket, or a spaceship). Students then wrote about their creations. Upon completion, the papers were collated and bound into a class book.

Centers Specific to the Concept

These literature-based centers also extended the study of pumpkins. The standards from different curricular areas (Kendall & Marzano, 1997) were recognized.

- Pumpkin Seed Center

Science Standard (K-3): Knows about the diversity and unit that characterize life.

Language Arts Standards (K-3): Demonstrates competence in using varied forms of writing. Demonstrates the ability to communicate orally for different purposes.

Art Standard (K-3): Understands the visual arts in relation to history and cultures.

Literature Experience:

Listen to/read Pumpkin garden: the story of a garden (1999), by G. Levenson (Berkeley, CA: Tricycle).

Expressive Activity:

Students used dyed pumpkin seeds and dark construction paper to create mosaic collages. Story paper was provided for students to write about their creations. Upon completion, the teacher matted the writing to the collage and displayed them around the classroom.

Student Responses: Students discussed the different patterns that were created. They wrote about their experiences in their daily journal.

- Make a Face Center

Math Standard: Understands and applies basic and advanced properties of the concepts of geometry.

Language Arts Standards (K-3): Demonstrates competence in using varied forms of writing. Demonstrates the ability to communicate orally for different purposes.

Art Standard: Understands the characteristics and merits of one's own artwork and the artwork of others.

Literature Experience:

Listen to/read Pumpkin day, pumpkin night (1999), by A. Rockwell
(New York: Scholastic).

Expressive Activity:

The teacher made several large pumpkins from oak tag and then laminated them. Students were provided with an assortment of geometric shapes to create different jack-o'-lantern faces. The students wrote stories about their creations. They shared their stories with the class, and then, the teacher collated them into a class book for the class members to enjoy.

Student Responses: Students enjoyed each others' stories and gave positive remarks.

- Mural Drawings

Science Standard (K-3): Understands the genetic basis for the transfer of biological characteristics from one generation to the next.

Language Arts Standards: Demonstrates competence in using varied forms of writing. Demonstrates the ability to communicate orally for different purposes.

Art Standard: Understands the characteristics and merits of one's own artwork and the artwork of others.

Literature Experience:

Listen to/read The pumpkin patch, by E. King (New York: Puffin).

Expressive Activity:

The teacher attached butcher paper to a chalkboard in the room.

Students used their crayons and construction paper to create a pumpkin patch scene. Upon completion, the students were provided with pumpkin shaped story paper to create poem images related to the mural. The poems were displayed around the mural and later collated and bound into a class book.

Student Responses: Students discussed their drawings and shared their poetry with one another.

- Cooking Center

Science Standard (K-3): Understands how species depend on one another and on the environment for survival.

Math Standard (K-3): Understands and applies basic and advanced properties of the concepts of measurement.

Language Arts Standards (K-3): Demonstrates competence in the general skills and strategies of the reading process. Demonstrates ability to communicate orally for different purposes. Demonstrates the ability to write for different purposes and audiences.

Health Standard (K-3): Understands essential concepts about nutrition and diet.

Literature Experience:

Listen to/read Pumpkin soup, by H. Cooper (New York: Farrar).

Expressive Activity:

The students made pumpkin trail mix using a word/picture recipe.

The students were then provided with large, lined index cards to create other pumpkin seed recipes. The recipes were shared with the class. A “cookbook” was printed and sent home with each student.

Student Responses: Students commented on how well they worked together to make their trail mix. Many recipes from the “cookbook” were tested at home by the students.

- Writing Center

Language Arts Standards (K-3): Demonstrates competence in using varied forms of writing. Demonstrates the ability to communicate orally for different purposes.

Art Standard (K-3): Understands the visual arts in relation to history and cultures.

Literature Experience:

Listen to/read Big pumpkin, by E. Silverman (S.D. Schindler, (Il.), New York: Scholastic).

Expressive Activity:

Students used story paper cut into a pumpkin shape to write and illustrate how they would move a gigantic pumpkin from the patch.

Student Responses: Students thoroughly enjoyed listening to one another's ideas for moving a gigantic pumpkin and gave many positive remarks.

Conclusions

The literature base developed for the science unit on pumpkins for kindergarten represented many genres of literature. It supported the integration of the science and language arts areas. This print-rich learning environment not only expanded the children's understanding of the science concept but also offered them many opportunities to engage in the language processes.

The options for learning provided through the learning centers gave these young children an opportunity to begin to take charge of their learning. As a result, they became considerably energized. The students' involvement in these options also provided real reasons to interact with others – the teacher

and other students. Such dialogue assisted the children in developing personal-social abilities as well as language-thinking abilities.

The children's active involvement in this rich-literature environment provided the teacher with opportunities to observe and document the children's thinking-language and personal-social growth. Thus, a closer connection was made between instruction and assessment.

Bibliography

Bosma, B. & Guth, N.D. (eds.), (1995). Children's literature in an integrated curriculum: The authentic voice. New York: Teachers College.

Butzow, C.M. & Butzow, J.W. (1989). Science through children's literature: An integrated approach. Englewood, CO: Teacher Ideas.

Harms, J.M. & Lettow, L.J. (1998). Literature and expressive activity (4th ed.). Edina, MN: Alpha.

Huck, C. (1996). Literature-based reading programs: A retrospective. New Advocate, 9, 23-33.

Kendall, J.S. & Marzano, R.J. (1997). Content knowledge: A compendium of standards and benchmarks for K-12 education (2nd ed.). Aurora, CO: Mid-Continent Regional Educational Laboratory.

Langer, J.A. (1995). Envisioning literature: Literacy understanding and literature instruction. New York: Teachers College.

Routman, R. (1991). Invitations: Changing as teachers and learners K-12. Toronto: Irwin.

Shanahan, T., Robinson, B., & Schneider, M. (1993). Integration of curriculum or interaction of people? Reading Teacher, 47, 158-160.

Smith, F. (1994). Understanding reading (5th ed.). New Jersey: Erlbaum.