

Plan, Do, Review...What's Bugging You? (Grades PreK-2): An Information Literacy Lesson Plan for Young Children

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Introduction

Early childhood marks a period of brain development that is unmatched at any other time in the life cycle. UCLA researchers note that, *"In the first three years of life, the number of synaptic connections in a young child's brain doubles to approximately 1,000 trillion, many more than will ultimately be present in the adult brain."* (Halfon et.al., 2001) More importantly, over the next ten to twelve years these connections are selectively diminished, based on experiences as well as genetics. This natural selection is integral to cognitive abilities later in life. Too many connections means that there won't be room for neural maturation in necessary areas; too few means that cognition controlled by certain broad areas of the brain may lose the ability to function. (Halfon et.al., 2001)

So what does all this have to do with bugs and information literacy? Simply stated, there is no better time to begin introducing information literacy processes within the context of daily experience and developmentally appropriate practice. Young children are hands-on learners. Child development principles that inform these practices assert that early learning occurs through interrelated physical, social, emotional, linguistic, aesthetic, and cognitive domains. Development in these domains is sequential and builds upon previously acquired skills; the rate at which this happens varies from child to child. Early experiences have cumulative positive (or negative) effects on children- for example, early positive interactions with other children in a playgroup foster social skills later in life while the absence of these interactions impedes social skills later in life. (NAEYC, 1997) Furthermore, NAEYC states, "children are active learners drawing on direct physical and social experience as well as culturally transmitted knowledge to construct their own understandings of the world around them." This learning is transactional, and based on the interplay of heredity and environment- the child and her experiences in the world. This lesson plan is offered as an example of a micro component of a larger planning process for 3, 4, and 5 year old children enrolled in an early childhood setting that utilizes project based curriculum in daily activities. It is not meant to be carried out in isolation, but rather to be contextually related to a macro plan developed through observation and inquiry of children's interests.

The project approach is based on the philosophy that in-depth inquiry about a topic of interest facilitates intrinsic motivation amongst students to develop their own learning needs and goals. (Katz, 1994) Furthermore, the project approach accepts that children are capable of determining the direction and extent of their learning about a particular topic. Projects last as long as interest lasts, and are implemented using a three-phase process: planning, field work, and debriefing. These project design features integrate nicely with Eisenberg and Berkowitz' Super3 information literacy process: Plan, Do, Review. Furthermore, the similar philosophical underpinnings of each model make it likely that project approach teachers will embrace the Super3 processes during daily project-related activities.

The lesson plan presented here focuses on insects- an often mentioned subject of interest among the preschool set. It is assumed that the Bug Project is in full swing, and that children and teachers have thoroughly discussed the plan. The activities presented here follow a standard early childhood morning schedule, focus on the fieldwork phase of the project model, and are aligned with Washington State Early Learning Benchmarks as well as Information Literacy standards as defined by the American Library Association.

Lesson Plan: What's Bugging You? A Continued Exploration of Insects (Grades PreK-2)

The objectives and skills in this lesson plan come from Domain 4 of the Washington State Early Learning Benchmarks: Cognition and General Knowledge, Science.

Objective/Outcome: Children who attend school today will:

- Demonstrate curiosity about the natural environment
- Demonstrate empathy for the natural world
- Ask questions and find answers through active exploration
- Make predictions and develop generalizations based on past experiences
- Evaluate their experiences through conversation with peers and adults

Skill: Throughout the day children will increase their ability to:

- Describe characteristics of plants, animals, and people
- Identify things as living or non-living, based on their characteristics
- Identify things as real or pretend, based on their characteristics
- Use non-standard tools (e.g. blocks, art materials, sensory materials) to explore the environment
- Use standard tools (e.g. magnifying glasses) to explore the environment
- Record information from an experience

Materials needed: This plan assumes that the preschool classroom has tables large enough to accommodate the adults and children in the room, and includes the following learning centers integral to an enriching environment. (Dodge, 2004) Suggestions for extra subject specific materials appear in parentheses.

- Books: (The Grouchy Ladybug by Eric Carle, Are You a Ladybug? by Judy Allen)
- Art center
- Blocks
- Dramatic play (plastic bugs, spiders, butterflies, ants)
- Sensory table (clear table, damp sand, tools like straws to build tunnels)
- Clay table
- Manipulative items (butterfly and bug puzzles)
- Science center - magnifying table with dirt, leaves, plastic ladybugs and live ladybugs from the garden store (children will release live ladybugs outdoors during “clean up” time)
- Outdoor play area

Additionally, children will write or draw in daily journals (spiral notebooks) during part of the day.

Program Introduction/Attention Activity: Breakfast with Ladybugs:

The routine in this early childhood setting follows a regular pattern: children will enter the classroom, hang up their coats and sit down to eat breakfast. To capture attention and engage the children in the day’s activities, the educator will point out clear containers in the middle of each table where several ladybugs will be feasting on their own leaf breakfast.

Instructors will explain to children that the class will continue to learn about bugs today and encourage children to discuss their thoughts and questions about the ladybugs in front of them. This discussion time incorporates relevancy in the activity as children relate their past experiences to what is in front of them. Instructors might start these discussions by asking questions like the following examples: Who has seen ladybugs before? Where? What else do ladybugs eat? What do you want to know about ladybugs, and I wonder how we could find out?

Instructors will remind children that discussing their personal experiences with ladybugs is part of *planning* what they will explore during the day. After breakfast, table groups will release the ladybugs outside with the assistance of an adult.

Next students will go to the large group area to “journal” before story time, according to the regular classroom routine. Teachers will invite children to journal (“write” stories, or draw pictures) about the ladybugs if they wish. The attention activities addressed above allow children to actively engage in the learning process through interaction with one another. The activity keeps their interest from fading (attention) and allows students to take ownership of the learning process (relevancy). Both of these characteristics, attention and relevance, are motivating factors according to John Keller’s ARCS model of instruction. Additionally, the activities align with educational standards as follows.

Standards alignment:

I.L. Standard 1.1 - Recognizes the need for information

I.L. Standard 1.3 - Formulates questions based on information needs

I.L. Standard 1.4 - Identifies a variety of potential sources of information

E.L. Benchmarks - Demonstrate curiosity and empathy, describe characteristics, ask questions, develop generalizations, evaluate experiences.

Body of the Lesson:

The “What’s Bugging You?” lesson integrates project related activities into the children’s existing routine, just as the ladybug breakfast attention activity did. This approach instills confidence in the children because they know what to expect and feel competent and comfortable to explore their environment. As mentioned earlier, the project approach is an inquiry approach. There are no “right” or “wrong” answers (Katz, 1994); consequently, children can experience satisfaction as they successfully integrate the knowledge that they already have into the development of new skills and conceptual abilities. These processes follow the last two components of John Keller’s motivational model of instruction, “Confidence” and “Satisfaction.” (Keller, 1983)

Activity One: Circle time - Bug books, music, and movement (30 minutes)

Skills addressed:

- Describe characteristics of plants, animals, and people
- Identify things as real or pretend, based on their characteristics
- Record information from an experience

Standards alignment is noted near each task and Appendix A contains a full description.

Overview: The instructor will present two books during circle time: Eric Carle’s *The Grouchy Ladybug*, and Judy Allen’s non-fiction book, *Are You A Ladybug?* In addition, one interactive song, *The Insect Song*, and one interactive chant, *We’re Going on a Bug Hunt*, will help to keep the children engaged with the instructional theme.

Tasks:

1. The instructor will read the story *The Grouchy Ladybug* (Card catalog summary: “A grouchy ladybug, looking for a fight, challenges everyone she meets regardless of their size or strength”). Pause occasionally to ask questions and let children make comments about the story. This interactive approach will increase the students’ engagement in the story and will enhance memory of the plot and problem that exists for the grouchy ladybug (Keller, 1983).
2. Ask children - What was the main problem the grouchy ladybug needed to solve? Record children’s ideas on a big sheet of paper to model recording and using information. Use plan, do, review categories on the page and point these terms out to children as they contribute to the discussion. Standards alignment (I.L.-1.3, 3.2, 3.3, 3.4, 5.2, 9.1-4; E.L.B.- Q, P, Ev)
3. Facilitate a Super3 conversation with the children regarding the grouchy ladybug character and her problem. For example (adapted from “A Sample Lesson Plan”, C. Keller, 2005):- **Plan:** What does the ladybug need to get ready to solve her problem? What can she use to find what she needs?- **Do:** Where does the ladybug find what she needs? What does she do with the information she has?- **Review:** How does the ladybug know that her problem is solved? Standards alignment (I.L. 1.2, 1.5, 2.4, 3.2-3.4, 5.2, 6.1, 9.1-9.4; ELB - Em, Q, P, Ev)
4. Sing the “Insect Song” *Adapt the tune from: “The Wheels on the Bus” The firefly at night goes blink-blink-blink, Blink-blink-blink, blink-blink-blink...The firefly at night goes blink-blink-blink All around the town! -The bees in the flowers go buzz-buzz-buzz....The ants in the grass go march-march-march...The crickets in the leaves go chirp-chirp-chirp...The caterpillar in the field goes creep-creep-creep....* Use the song as a guide, then encourage individual children (as many as possible) to choose the next bug and sound they’ll sing about. This song is a transition activity to the next story and will allow children to express what they already know, or to predict about bugs and the noises they make. Standards alignment (I.L. 9.1-2; ELB - P)
5. Read the story, *Are You a Ladybug?* (Amazon.com summary: “Beginning with its title question, “Are you a ladybug?,” this accessible book is perfect for reading aloud and tells young readers how they would experience life if they were a ladybug.”)

6. Lead another plan, do, review discussion. Remember that ideas don't always follow a linear path and that the inquiry process loops around for everyone, including small children. Record students' questions and ideas on a large sheet of paper to model note taking and use of information. Refer to note taking in future lessons. - **Plan:** Ask the children to think about the questions they posed about ladybugs during breakfast. Why did they choose these questions? Where might they find the answers? Record the students' questions/responses on a large sheet of paper. Make two columns on the large paper - use the first column to list the student question, and the second column to list where the students think they might find the answers. - **Do:** Did the "Are You a Ladybug" book answer any of the ladybug questions? Help the children look through the book to find out. Talk about other information sources that one might use to address questions as the "What's Bugging You" project progresses. Encourage children to talk about ladybug characteristics they discovered by listening to and talking about the two stories. Ask children "what are some differences between the ladybug in Eric Carle's book and the ladybugs in Judy Allen's book?" - **Review:** Ask students to comment on the following questions: Did you like this book? Why or why not? Were your questions answered? What new questions do you have about ladybugs? Are ladybugs worthy of further exploration? Standards alignment (I.L.-1.3, 3.2, 3.3, 3.4, 5.2, 9.1-4; E.L.B.- C, Q, P, Ev)
7. Chant "We're Going on a Bug Hunt" with children. *Adapted from the story-game: "We're going on a bear hunt" adding verses as children wish.* We're going on a bug hunt! We're going to see some big ones. What a sunny day! Are you ready? OK! Oh my! A bee! A black and yellow bee, Flying over the flowers. BUZZ..... We're going on a bug hunt! We're going to see some big ones. What a sunny day! Are you ready? OK! Oh, my! An ant! A tiny, black ant, Crawling through the grass. Shh... This, again, is a transition activity (to outside play) that allows children to express what they already know or can predict about bugs and the noises they make. Standards alignment (I.L. 9.1-2; ELB - P)





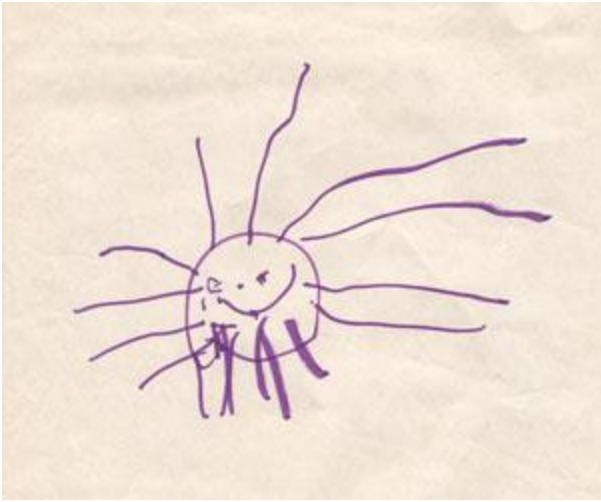
Activity Two: Outside play - Bug hunt and free play (45 minutes)

Skills addressed:

- Describe characteristics of plants, animals, and people
- Identify things as living or non-living, based on their characteristics
- Use standard tools (e.g. magnifying glasses) to explore the environment
- Record information from an experience

Task: The bug hunt described here is open-ended and will be loosely facilitated by the instructor moving between groups of children. When children choose not to “bug hunt” they will engage in alternate outside play activities.

1. After children line up to go outdoors, explain that there are special tools they can use to explore the bugs they will “hunt” for. Remind children that they will not capture bugs, just look at them closely, observe and think.
2. **Plan:** Ask children to predict what types of bugs they think they will see, where they think they might find the most bugs, and what kinds of things they might want to look for when they see one. Ask students what they might want to have on hand to remember the bug’s details once the class comes inside. Remind students that they’re “planning their hunt”.
3. **Do:** Distribute magnifying glasses and remind students that you have a camera available in case they wish to document their specimens. Allow children to take their journals outside if they wish to draw their creatures. While children “hunt” ask them about the specimen characteristics they see (How many legs? What color? Bright or camouflaged? Where does this bug like to be?). Remind children that they’re “doing” the hunt. Document childrens’ experiences with photographs or words to use later. -
4. **Review:** As children find bugs, ask them evaluative questions. (How did you find this bug? Was that part of your plan? What made this a good spot to look? Is this something you’d like to do again? Why or why not?). Remind them that they’re “reviewing” their work. Standards alignment (I.L. 1.1-5, 3.1-4, 4.1-2, 6.1-2, 7.1, 9.1; ELB - C, Em, Q, P, Ev)



Activity Three: Center time - Integrating the bug project into free play (45 minutes)

Skills addressed:

- Describe characteristics of plants, animals, and people
- Identify things as living or non-living, based on their characteristics
- Identify things as real or pretend, based on their characteristics
- Record information from an experience
- Use non-standard tools (e.g. blocks, art materials, sensory materials) to explore the environment

The next part of the morning involves inside choices for children in the learning centers of the classroom. Below is an example of how the “What’s Bugging You” unit is integrated in learning centers. Through everyday play, children are invited to:

1. Art center - create “butterfly prints” by painting in the center of a piece of paper, folding it in half, and then unfolding it to reveal a symmetric pattern. Draw or paint (free form) something that they’ve thought about during the day.
2. Blocks - create structural representations of bugs or bug habitats.
3. Dramatic play (plastic bugs, spiders, butterflies, ants) - act out stories using props.
4. Sensory table (see-through table, damp sand, tools like straws and scoops to build tunnels and hills, plastic ants, spiders, and bugs) - explore burrowing and insect movement.
5. Clay table - create sculptural representations of bugs.
6. Manipulative items (realistic butterfly and bug puzzles) - manipulate puzzles; notice differences between types of bugs.
7. Science center - magnifying table with dirt, leaves, plastic ladybugs and live ladybugs from the garden store (children will release ladybugs outdoors during “clean up” time) - explore ladybugs and ladybug behavior in a close up, controlled environment.

Remind or ask children which stage of “plan, do, and review” they might be in at any given time. In the art center, for example,- How will they choose the colors for their butterflies? (plan)- What mediums will they use? (plan)- Will they create real butterflies or pretend butterflies? (plan)- Which colors will work best for what they want to do? (plan)- How did their color combinations turn out? (review)- Are they happy with their plan and print? (review)- Did they learn something new? (review)- What do they want to remember from this activity for next time? (review)Standards alignment: (I.L- 1.1-1.5, 2.4, 3.1-4, 4.1-2, 5.2, 6.1-2, 9.1; ELB - C, Em, Q, P, Ev) Transitional activity: clean up.

Evaluation and Conclusion

After the children clean up, join together for a circle time before lunch. Take time for broader evaluation of the activities of the day with children. Topics of discussion might include - "What were your favorite parts of the day?, What would you (children) like to do in the future?"

Mention more specific questions about the day's learning such as, "How can you tell if a bug is real or pretend?", "What kinds of bugs like to hide in nature?", and "Where could you find bugs in your own backyard?" The children's answers to these questions provide insight on the success of the micro-plan and contribute to the development of future lesson plans. Broader, cumulative assessment measures are important for evaluation of a micro plan as well.

Researchers Chittenden and Jones note, "A teacher with whom we have worked remarked, "It's the many little conversations among children that really count for something in promoting their ideas and observations." (Chittenden and Jones, 1999) The social nature of young children can be documented through written observations, class notes, displays of drawings, and records of class discussions. (Chittenden and Jones, 1999) Instructors may synthesize and review such information to gain a richer perspective of the learning that is taking place in the classroom.

Sources

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Appendix A - Standards and Benchmarks Washington State Early Learning Benchmarks - Domain 4 - Science

- C- Demonstrate curiosity about the natural environment
- Em- Demonstrate empathy for the natural world
- Q- Ask questions and find answers through active exploration
- P- Make predictions and develop generalizations based on past experiences
- Ev- Evaluate their experiences through conversation with peers and adults

Information Literacy Standards for Student Learning

- Standard 1 The student who is information literate accesses information efficiently and effectively.-Indicator 1. Recognizes the need for information-Indicator 2. Recognizes that accurate and comprehensive information is the basis for intelligent decision making-Indicator 3. Formulates questions based on information needs-Indicator 4. Identifies a variety of potential sources of information-Indicator 5. Develops and uses successful strategies for locating Information
- Standard 2 The student who is information literate evaluates information critically and competently.- Indicator 1. Determines accuracy, relevance, and comprehensiveness- Indicator 2. Distinguishes among fact, point of view, and opinion- Indicator 3. Identifies inaccurate and misleading information- Indicator 4. Selects information appropriate to the problem or question at hand3
- Standard 3 The student who is information literate uses information accurately and creatively.- Indicator 1. Organizes information for practical application- Indicator 2. Integrates new information into one's own knowledge- Indicator 3. Applies information in critical thinking and problem solving- Indicator 4. Produces and communicates information and ideas in appropriate formats
- Standard 4 The student who is an independent learner is information literate and pursues information related to personal interests.- Indicator 1. Seeks information related to various dimensions of personal well-being, such as career interests, community involvement, health matters, and recreational pursuits- Indicator 2. Designs, develops, and evaluates information products and solutions related to personal interests
- Standard 5 The student who is an independent learner is information literate and appreciates literature and other creative expressions of information.- Indicator 1. Is a competent and self-motivated reader- Indicator 2. Derives meaning from information presented creatively in a variety of formats- Indicator 3. Develops creative products in a variety of formats
- Standard 6 The student who is an independent learner is information literate and strives for excellence in information seeking and knowledge generation.- Indicator 1. Assesses the quality of the process and products of personal information seeking- Indicator 2. Devises strategies for revising, improving, and updating self-generated knowledge
- Standard 7 The student who contributes positively to the learning community and to society is information literate and recognizes the importance of information to a democratic society.- Indicator 1. Seeks information from diverse sources, contexts, disciplines, and cultures- Indicator 2. Respects the principle of equitable access to information5
- Standard 8 The student who contributes positively to the learning community and to society is information literate and practices ethical behavior in regard to information and information technology.- Indicator 1. Respects the principles of intellectual freedom- Indicator 2. Respects intellectual property rights- Indicator 3. Uses information technology responsibly
- Standard 9 The student who contributes positively to the learning community and to society is information literate and participates effectively in groups to pursue and generate information.- Indicator 1. Shares knowledge and information with others- Indicator 2. Respects others' ideas and backgrounds and acknowledge stheir contributions- Indicator 3. Collaborates with others, both in person and through technologies, to identify information problems and to seek their solutions- Indicator 4. Collaborates with others, both in person and through technologies, to design, develop, and evaluate information products and solutions