



Unit 3 – Science: Key Topic 5: Exploring the Research Highlights of the Science Domain

Science Domain:
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Science Domain

Focus Statement

Students explore some of the research base for the science domain by reviewing the research highlights and additional books or Web resources.

Curriculum Alignment Project (CAP) Student Learning Outcomes

The Curriculum Alignment Project's (CAP) lower division eight courses and student learning outcomes are mapped onto each instructional guide learning experience. See Appendix A for the specific student learning outcomes, objectives, and examples of course content and topics for the courses listed below.

- Child Growth and Development
- Introduction to Curriculum
- Principles and Practices of Teaching Young Children
- Teaching in a Diverse Society
- Practicum-Field Experience

Instructional Methodologies

- Book review
- Class discussion
- Class presentation
- Development of a resource tool
- Jigsaw reading
- Literature review
- Pairs or small groups
- Reflective discussion
- Short paper or report



California Early Childhood Educator Competency Areas to Consider

The Faculty Initiative Project will undertake a comprehensive process in the future to map the content of the instructional guides to the California Department of Education, Early Education and Support Division's *California Early Childhood Educator Competencies*. The "Competency Areas to Consider" below are listed in this instructional guide as a preliminary exploration of how particular competency areas might be addressed through these learning experiences.

- Child Development and Learning
- Culture, Diversity, and Equity
- Relationships, Interactions, and Guidance
- Family and Community Engagement
- Learning Environments and Curriculum
- Leadership in Early Childhood Education
- Professionalism



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Before You Start

This key topic is intended to acquaint students with the research base of the domain and with resources available to deepen and enrich their understanding of the science domain. Students are asked to read the research highlights and to work further with one of them. As with the foundations, it is important for students to understand that there is a strong research base in this domain for how and what children will learn about science in the early years. It is also important for students to understand that this research is related to children’s learning—not to the content of the science topic itself.

There is a list of resources for teachers on pages 232–233 of the *California Preschool Curriculum Framework, Volume 3* that contains a list of books and a list of Web resources. Students will be asked to use both. This will require access to a library and the Internet. If that is not possible for some students, faculty can support students in exploring how they might find these resources. In some remote areas, locating them might be problematic, but it also is important for students to find out how they can access these resources as this will be important in their work with children, parents, and colleagues.

Information Delivery



Slide 2

Ask students to find these research highlights in Chapter 3 of the *California Preschool Curriculum Framework, Volume 3* and read them together:

- Children’s Misconceptions in Science (pp. 150–151)
- Family Activities Benefit Children (pp. 174–175)
- Understanding Cause-and-Effect (p. 185)
- The Insides of Living Things (p. 205)
- Growth and Change in Living Things (p. 206)

The strand of Scientific Inquiry provides samples of developmental sequences for each substrand on pages 154–155 and page 166. Ask students to read these as well, and remind them that these are also



research based, although the specific studies are not cited here. Also remind students that the foundations illustrate these developmental sequences in more detail and are also research based.

Active Learning

Getting it started

Organize students into pairs and assign a research highlight to each pair. Ask students to carefully read and discuss their highlight and agree on a key point of the highlight. Then ask students to present their key point. If you have more than one pair per highlight, it would be interesting to have all pairs for each highlight present at one time and note the similarities and differences in their perceptions of what is key for each highlight.

Keeping it going

Point out that each research highlight is supported by references in the *California Preschool Curriculum Framework, Volume 3*

Endnotes (pp. 237–240) that are indicated by small superscript numbers after some of the sentences in the highlight. Ask students to locate these studies or writings in the Endnotes. Ask them to briefly reflect on the research that has been done to deepen our understanding of what and how young children learn about science. What do the students learn about the research base by reviewing these references?

Taking it further

Next, ask students to turn to the Teacher Resources on pages 232–233. Note that these are in two sections: Books and Web Resources. Ask the students to continue in their pairs and to find one book and one Web resource that each pair would like to explore further. Note that the books tend to provide rationale, research-to-practice information, and examples of curriculum planning and activities to use in the classroom. Web resources tend to focus on descriptions of programs, training opportunities, and other professional development, as well as activities and curriculum resources.

Again ask the students to work in their pairs and prepare a brief one-page review for the book and a brief one-page review for the Web resource. They can do this by dividing the work so that one student explores the book and one explores the Web resource. This might align with each student's access to library and/or online resources.

Online Options

Students could write a short description of the key point and a summary of the research for the highlight they read. These summaries could be posted online for review and comparison by the instructor and their peers.



However, each is to review the partner's work and ensure that it is presented clearly and usefully for peers.



Slide 3

A brief exploration should provide them with the information needed for their review, which should contain these elements:

- Full bibliographic information as presented in the Teacher Resource lists
- A summary of the content of each resource
- What appears to be most helpful for teachers of young children, with one or two specific examples
- A personal reflection on the resource: Surprises? Concerns? Something new learned?

Putting it together

Organize students' reviews and compile them as a resource for all students.

Reflection

After students complete any of the active learning segments, faculty can engage students in reflecting on the research base of the science domain.



Slide 4

- As you have been engaging with the research base, what has stood out for you?
- How has this affected your interest in integrating science into the curriculum for young children?
- What questions or topics relating to how children learn about science would you like to find out more about?
- How could you do this?