KANSAS Strategies for Educational Improvement

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http://tinyurl.com/publhlc

Three Instructional Models

Asking Questions and Defining Problems

Model One

Two Phase Research Process for Content and Librarian Experts (Dow & Thompson, 2016)
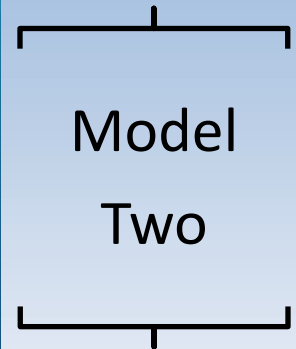
PHASE ONE: Preparation	PHASE TWO: Experimental
Literature Context	Data Context
Topic selection and problem statement access, retrieval, evaluation, and use of existing research publications	Design study
Observation of relevant environment(s)	Conduct experiment
Question(s)	Analysis of data
Formulate claim or hypothesis	Communicate findings in new publications

Topic selection and problem statement

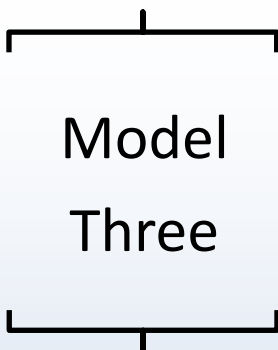**OBSERVE ~ KNOW ~ QUESTION ~ CLAIM**

With the guidance from content teacher(s) and school librarian, write a brief scenario with a 4-part structure that captures the problem (topic):

1. **OBSERVE** What have I observed? - Begin with an observation:
   I noticed that. . .

2. **KNOW** What do I know? - Mention information already known:
   I learned from my 4-H leader that . . . .

3. **QUESTION** What is my question? State one or more central questions:
   I would like to know if. . .

4. **CLAIM** What is my claim, or assertion? End scenario with a claim, or hypothesis statement. If grass has sunlight, then grass will . .

Model Two

Model Three

Co-teacher roles with students

Science Teacher	Mathematics Teacher	Librarian	Student
Partner with Math Teacher	Partner with Science Teacher	Partner with Science and Math Teachers	Make connections from real-world observations and experiences to research questions that matter in today's world
Partner with Librarian	Partner with Librarian	Teach the two phase research process model	Know and use the two phase research process model
Provide the subject area context	Provide the subject area context including nominal, ordinal, interval, ratio levels of data; design of data collection; development of charts, graphs, figures depicting accurate findings	Teach: information authority; information format; information value; information research as inquiry; information as scholarly conversation; and Information exploration	Gain specialized knowledge of a subject area
Teach the two phase research process model			Use STEM content, information, and technology on the basis of accuracy, validity, importance, and context
Design and implement assignments that provide opportunities for application	Teach the two phase research process model	Guide students in key word searches, evaluation, and selection of sources	
Teach students to analyze findings and draw conclusions	Design and implement assignments that provide opportunities for application	Facilitate report writing, presentations, and publishing	
	Teach students to analyze findings and draw conclusions		