TEACHING MODELS FOR DIFFERENTIATION
2.5

Teaching models are frameworks for instruction that use organized sets of strategies to accomplish specific learning goals. Teaching models can be effective tools in planning instruction for differentiation. Several models are well matched to the principles of differentiation for gifted learners. Each of the models is presented in greater detail following the overview.

Overview of Teaching Models

Concept Development Model. Based on the work of Hilda Taba (1966), the concept development model provides students with opportunities for inductive thinking and the important strengthening of their conceptual background for study. Engaging students in the development of generalizations related to key concepts is an important part of their preparation for more advanced work.

Problem-Based Learning. This instructional model provides a way to teach sophisticated content and high-level thinking within the context of an ill-structured problem. This problem is commonly presented by the teacher and based on teacher-selected knowledge and skills within a content area. Students work as a group toward the resolution of the problem.

Paul Reasoning Model. The Paul reasoning model (1992) builds upon the four aspects of reasoning: elements of reasoning, reasoning abilities, traits of a reasoning mind, and standards for reasoning. The reasoning model helps students to consider the elements of reasoning in relation to issues or problems within the context of a content area.

Research Model. The research model provides students with a set of steps and a framework of questions for guiding their personal research. The model guides students away from mere reporting and toward explorations that incorporate a focus on a question that can be researched. The model offers students the opportunity to ask and answer questions about things that matter.

Socratic Seminar. A Socratic seminar engages students in disciplined conversation about a particular reading or set of readings students have prepared. Students read to deepen their understanding of the complex ideas presented in the text. Through collaborative dialogue, students then examine big ideas logically and consider opinions through discussion with others in the seminar setting. An opening question with no right answer frames the reading of the text and the discussion.

Teaching Models

Concept Development Model
The concept development model, based upon the work of Hilda Taba (1966), involves both inductive and deductive reasoning processes. The model focuses on the creation of generalizations from a student-derived list of created concepts. The model has several steps and involves student participation at every step. Students begin with a broad concept, determine specific examples from that, create appropriate categorization systems, establish a generalization from those categories, and then apply the generalization to their readings and other situations.

Given the stimulus of a broad concept, such as *change*, students generate examples of the selected concept. Examples are derived from students' own understanding and experiences. Focusing questions such as *"What does this word mean to you? Can you give me any examples of this concept?"* allows open-ended responses in which students of all levels can participate. Students use their memories of events and things to determine if there is an appropriate "fit" with the concept.

1. Once an adequate number of examples has been elicited, students then group items together. Focusing questions include *"Do any of these examples have anything in common? Could you put any of these things together somehow?* Such a process allows students to search for interelatedness and to organize a mass of material. Students create relationships in flexible manners and perceive the world, using their personal schema. The teacher acts as a facilitator and asks the students focusing questions such as *"Why do you think that these belong together?"* Students are required to explain their reasoning and to seek clarification from each other.

2. With focusing questions such as *"What could you name this group? What title would you give this collection?"* students are asked to label their groups. Labeling also forces students to establish flexible, hierarchical concepts of relatedness: the idea that one thing or a concept could name a variety of other things. What the students mean affects the placement of particular items. The labeling process allows them to communicate the intent of their thinking. The labels should be fairly universal in nature. If labels appear to be too specific, further subsuming should occur, using the focusing questions of *"Do any of these groups have anything in common? What could we call this new group?"* Steps two and three should be repeated. New groups should then be given new labels.

3. Students are then asked to think of non-examples of the broad concept. With focusing questions such as *"What does not fit this concept? Can you name things that are not examples of the concept?"* students are required to differentiate and distinguish between examples and non-examples. In this way an understanding of what is contained and what is not contained within the definitional outlines of the concept is developed.

4. The students then determine a statement of generalization, using the concepts elicited from the labeling process. Examples for change could include *"Change may be positive or negative"* and *"Change is linked to time."* Generalizations should be derived from

student input and may not precisely reflect the teacher's established concepts. However, they should be fairly global in nature.

5. Although the generalizations were derived from students' own experiences, they are then applied to readings and tested in specific contexts. Focusing questions such as *"How well does the generalization hold up in this piece?"* allow students to take the generalizations that they derived and evaluate how well events in stories uphold those generalizations. If any changes are needed in the language of the generalizations, students may go back and make changes. The teacher can use a focusing question such as *"Are changes in the generalization necessary?"*

6. Students are then asked to identify specific examples of the generalizations from their own readings. *"Can you name any examples of this generalization from this piece?"* Critical reading skills are reinforced as students begin to apply the generalization to books and stories. Students are asked to apply the generalization that they have created to other situations, including those found in readings, their own writings, history, and their own lives.

Here are some broad-based concepts that might be explored in various contexts:

Art	Courage	Law
Beauty	Democracy	Progress
Chance	Family	Revolution
Change	Honor	Time
Conflict	Justice	Truth
Greed	Power	Loyalty

Problem-Based Learning Model

Problem-based learning is a curricular framework that, through student and community interests and motivation, provides an appropriate way to "teach" sophisticated content and high-level process . . . all while building self-efficacy, confidence, and autommomous learner behaviors (Barrows, 1986; Delisle, 1997; Stepien, Gallagher, & Workman, 1993).

<u>Essential Elements of Problem-Based Learning</u>

The teacher presents an ill-structured problem.
Students create a precise statement of the problem.
Students find information to help them solve the problem.
Students evaluate possible solutions to the problem (includes experimental
      design).
Students create a final product relating to the problem (ex. a legislative bill, a
      mock town meeting, a speech, a scientific publication).
The teacher acts as a metacognitive coach.

What is an "Ill-Structured" Problem?

More information than initially presented may be necessary to
    - Understand what's going on
    - Learn what caused it to be a problem
    - Decide how to fix it
There's always more than one right way to figure it out.
    - Fixed formulas won't work
    - Each problem has unique components
    - Each problem solver has unique *characteristics, background, and experiences*
The definition of the problem shifts or changes as new information is gathered.
Ambiguity is a part of the environment throughout the process.
    Data are often incomplete
    …or in conflict
    …or unavailable
    …but choices must be made anyway, as time for decision-making is limited.

Key Instructional Moments in a PBL Episode

Introducing the problem
Reviewing research
Problem definition
Research for problem resolution
Reviewing research
Building a resolution
Presenting the resolution

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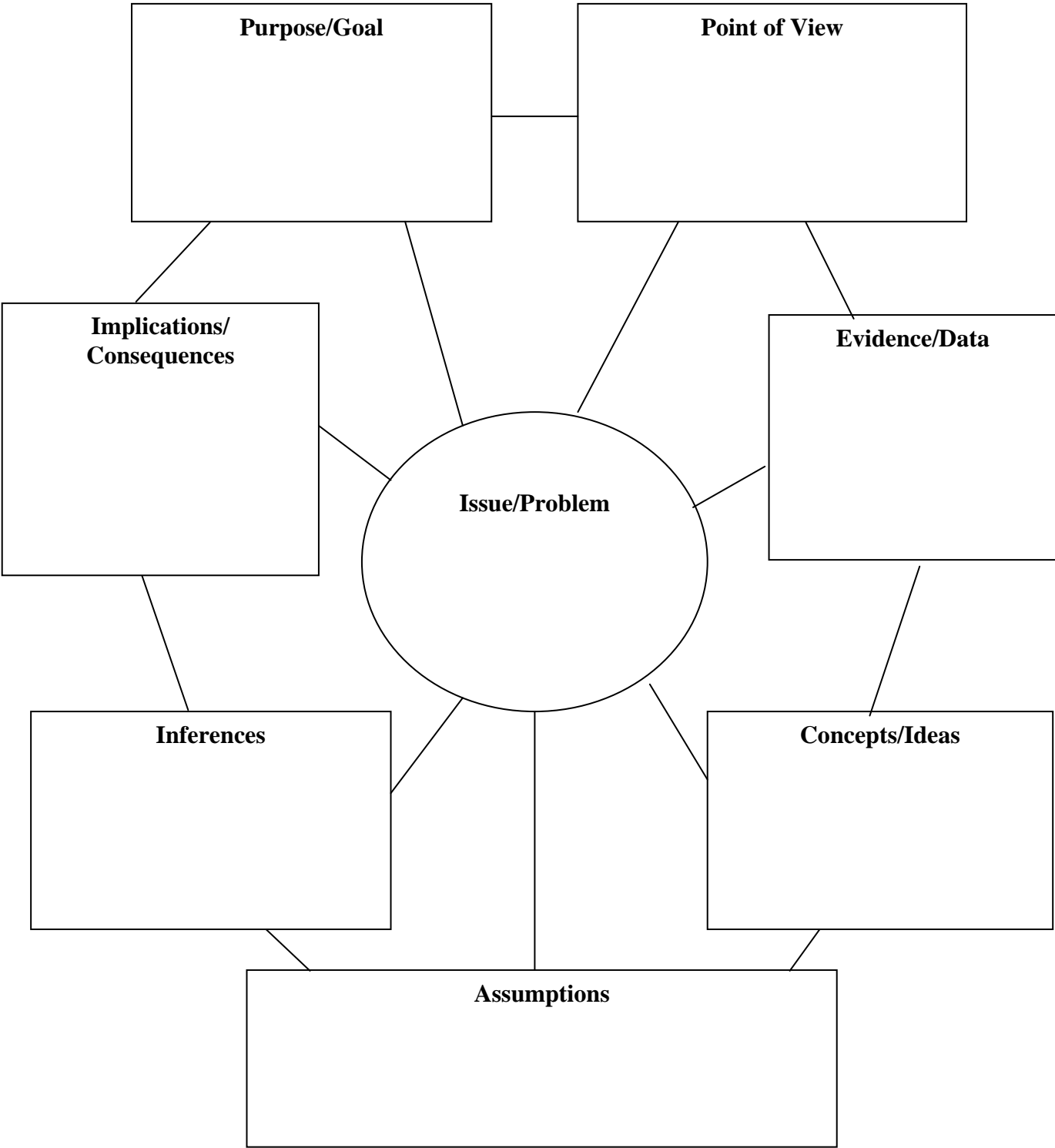Services

Reasoning Model

The reasoning model focuses on eight elements (Paul, 1992). It is embedded in a unit through questions, writing assignments, and research work.

1. <u>Purpose, Goal, or End in View:</u> Whenever we reason, we reason to some end, to achieve some purpose, to satisfy some desire, or to fulfill some need. One source of problems in reasoning is traceable to "defects" at the level of goal, purpose, or end. If our goal itself is unrealistic, contradictory to other goals we have, confusing or muddled in some way, then the reasoning we use to achieve it is problematic. The goal, purpose, or end of our thinking is something our mind must actively create.

2. <u>Question at Issue (or Problem to Be Solved):</u> Whenever we attempt to reason something out, there is at least one question at issue, at least one problem to be solved. One area of concern for the reasoner should therefore be the very formulation of the question to be answered or problem to be solved. If we are not clear about the question we are asking, or how the question relates to our basic purpose or goal, then it is unlikely that we will be able to find a reasonable answer to it or one that will serve our purpose. The question at issue in our thinking is something our mind must actively create.

3. <u>Points of View or Frame of Reference:</u> Whenever we reason, we must reason within some point of view or frame of reference. Any defect in our point of view or frame of reference is a possible source of problems in our reasoning. Our point of view may be too narrow or too parochial, may be based on false or misleading analogies or metaphors, may not be precise enough, may contain contradictions, and so forth. The point of view which shapes and organizes our thinking is something our mind must actively create.

4. <u>The Empirical Dimension of Our Reasoning:</u> Whenever we reason, there is some "stuff," some phenomena, about which we are reasoning. Any defect, then, in the experiences, data, evidence, or raw material upon which our reasoning is based is a possible source of problems. We must actively decide which of a myriad of possible experiences, data, evidence, etc. we will use.

5. <u>The Conceptual Dimension of Our Reasoning:</u> All reasoning uses some ideas or concepts and not others. Any defect in the concepts or ideas (including the theories, principles, axioms, or rules) with which we reason is a possible source of problems. The concepts and ideas which shape and organize our thinking must be actively created by us.

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6. <u>Assumptions (the Starting Points of Reasoning)</u>: All reasoning must begin somewhere, must take some things for granted. Any defect in the starting points of our reasoning, any problem in what we have taken for granted, is a possible source of problems. Only we can create the assumptions on the basis of which we will reason.

7. <u>Inferences:</u> Reasoning proceeds by steps called inferences. To make an inference is to think as follows: "Because this is so, that also is so (or probably so.)" Any defect in the inferences we make while we reason is a possible problem in our reasoning. Information, data, and situations do not determine what we shall deduce from them; we create inferences through the concepts and assumptions which we bring to situations.

8. <u>Implications and Consequences (Where Our Reasoning Takes Us)</u>: All reasoning begins somewhere and proceeds somewhere else. No reasoning is static. Reasoning is a sequence of inferences that begin somewhere and take us somewhere else. Thus all reasoning comes to an end, yet could have been taken further. All reasoning has implications or consequences beyond those the reasoner has considered. Any problem with these (implications that are false, undesirable consequences) implies a problem in the reasoning. The implications of our reasoning are an implicit creation of our reasoning.

(Paul, *Critcal Thinking: What Every Person Needs to Survive in a Rapidly Changing World,* 1992)

Figure 13. The Reasoning Web (Paul, 1992)

Purpose/Goal	Point of View

| Implications/
Consequences | | Evidence/Data |

Issue/Problem

| Inferences | | Concepts/Ideas |

Assumptions

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The Reasoning Web with Literature

Teachers can assist students in considering a piece of literature using the reasoning web. The model can be used to probe different avenues of student reasoning about what they read. Teachers may select a few of the questions or develop the complete reasoning web through story-based questions. Some types of questions will work better with certain pieces of literature. The purpose of using the web is to enhance reasoning qualities of the mind in students as they engage in written and oral communication.
(Note: It is not always necessary to use every element listed in the graphic organizer.)

Concept: What concepts are central to understanding the story? What do we understand about these concepts?

Point of View: What point of view is the story told from?

Inferences: What inferences might be made about the ending of the story based on specific events?

Purpose: What is the purpose of the story?

Implications: What are the implications of character behavior at this point in the story?

Issue: What is the central issue in this story?

Assumptions: What assumptions does the author make about _____?

Data/Evidence: What evidence is presented that the central character is motivated by a given emotion?

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Research Model

The research model provides students a way to approach an issue of significance and work it through individually and in small groups. Its organization follows major elements of reasoning.

1. **Identify your issue or problem.**
     What is the issue or problem?
     Who are the stakeholders and what are their positions?
     What is your position on this issue?

2. **Read about your issue and identify points of view or arguments through information sources.**
     What are my print sources?
     What are my media sources?
     What are my people sources?
     What are my preliminary findings based on a review of existing sources?

3. **Form a set of questions that can be answered by a specific set of data. Examples:**
     What would the results be of _____?
     Who would benefit and by how much?
     Who would be harmed and by how much?
     What other questions do I have?

4. **Gather evidence through research techniques such as surveys, interviews, or experiments.**
     What survey questions should I ask?
     What interview questions should I ask?
     What experiments should I do?

5. **Manipulate and transform data so that they can be interpreted.**
     How can I summarize what I found out?
     Should I develop charts, diagrams, or graphs to represent my data?

6. **Draw conclusions and inferences.**
     How can I interpret what I found out?
     What conclusions and inferences can be drawn from my results?

7. **Determine implications and consequences.**
     What are the implications and consequences of my results in light of the initial problem?
     Do I know enough or are there now new questions to be answered?

8. **Communicate Results**
     Have I used Sections 1–7 above to organize a written report?
     Have I used Sections 1–7 above to organize an oral presentation?

Choosing a Research Topic: Characteristics of an Issue

Real world. An issue is a controversy or problem that people are discussing or should be discussing. It is ambiguous with no clear-cut or easy solutions. As new information is obtained, the problem changes.

Multiple points of view. Different people or groups have different perspectives or points of view about an issue. Depending on how the issue is resolved, various groups and individuals (called stakeholders) stand to win or lose tangible things such as income and recreational areas or intangible things such as solitude and freedom of speech.

Researchable with substantial information available. Remember that to develop a convincing argument, you will need multiple sources of information and data. Important issues and real-world problems are informed by historical and contemporary information sources and by the collection and analysis of a variety of data.

Worthy topic and personal involvement. Research offers the opportunity to ask questions about things that matter. While asking questions and seeking solutions, you have the chance to consider the arguments of others and to contribute your personal perspective and original thinking. When you care about an issue, you will be willing to spend time digging for evidence, taking a stand, developing an argument, and proposing a resolution to the problem.

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Socratic Seminar Model

A Socratic seminar is a discussion/question format in which a small group of students synthesize their thoughts and opinions on a particular reading selection using the Socratic method. Several elements are essential for a Socratic seminar:

1. **Substantive Reading Selection.** The text for the Socratic seminar may be a reading selection within any content area. The selection should be rich in ideas, issues, and values to allow students to question the text and their own thoughts as they prepare for the discussion. All participants must read the material in advance and come prepared to participate.

2. **Important Question.** The students' reading of the text and/or opening discussion is guided by an important question that has no right or wrong answer. The question should guide students to portions of the text to support their thinking as they speculate, evaluate, define, and clarify the issues.

3. **Active Participants.** Participants share the responsibility for the quality of the seminar. Preparation for the discussion is the responsibility of each participant. A circle arrangement is useful as it allows for eye contact. (Students who are not prepared should excuse themselves from the discussion and remove themselves from the primary circle. They should only observe and take notes on the inner group's discussion.)

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During the seminar, participants engage in active listening, share their ideas and questions in response to the ideas and questions of others, and search for evidence in the text to support their ideas. The seminar requires rigorous attention to careful reading, thinking, listening, and speaking and should conclude with all participants having a greater understanding of the issue or reading.

The key to Socratic seminar is the open and free discussion of a topic. Participants should use agreed-upon guidelines for discussion. Generally the teacher acts as facilitator only and does not give any response, negative or positive, to the students' discussion. The facilitator's sole responsibility is to ask well-thought-out, open-ended questions that generate discussion.

Wiggins & McTighe (1998) offers the following as essentials for questions in a Socratic seminar:
- They point to the heart of the subject or topic, especially their controversies.
- They generate multiple plausible answers, perspectives, and research directions—leading to other questions.
- They cast old knowledge, ideas, texts in a new light; they make the familiar strange and the strange familiar.
- They lead to discovery and "uncoverage," as opposed to "coverage."
- They engender further and deepening interest in the subject.
- They are provocative, enticing, and engagingly framed.

Section Summary

Each of these models provides a framework for instruction and supports students' thinking and learning in the content areas. Models may be used in any setting for gifted services. All students in the classroom could benefit from use of the models. Gifted learners will find in the models opportunities for advanced content, in-depth experiences, and problem solving critical to their growth.

When students experience the use of the models, they begin to develop facility with critical thinking and creative thinking skills. Exposure to the models over time enables students to become more effective and sophisticated users. Each model can be used in multiple content areas and, to some degree, at all grade levels. Students deepen their thinking when they are comfortable with a model and can use it as a familiar tool in various content areas.