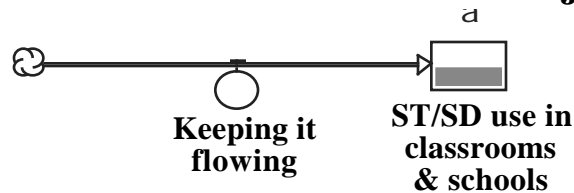


GLYNN'S INTEGRATION OF SYSTEMS THINKING A Waters Foundation Grant Project



DESIGNING INSTRUCTIONAL UNITS WITH ST/SD APPROACH

Grade Level: 8th
Subject: SOCIAL STUDIES/LANGUAGE ARTS

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Designing An Instructional Unit With A Systems Thinking/System Dynamics Approach

The study of the history and/or literature of one nation or a group of nations can be enhanced with an ST/SD approach.

WHY USE THIS APPROACH?

1. It is important for students to discover that in fact or fiction “the more **THINGS** change; the more they **STAY** the same”.
2. It is important for students to relate present events to the patterns of behavior created by a particular sequence of events.
3. It is important for students to reason that these patterns of behavior show up repeatedly, therefore outcomes might be predictable and leverage points for change could be recognized and developed.
4. It is important for students
 - to connect ideas;
 - to find one truth in the light of another;
 - to develop a broad foundation for the depth of knowledge to be acquired.

WHAT ARE THE DESIRED RESULTS FOR THE STUDENTS?

1. LEARNING TO RELATE SEQUENCES OF EVENTS TO PATTERNS OF BEHAVIOR:

WARNING: Students, for the most part, get very little help from teachers in fitting together pieces of information into **SYSTEMS** (groups) which demonstrate behavioral patterns over time.

2. LEARNING TO DETECT THE OPERATING STRUCTURE OF A SYSTEM:

WARNING: Students need to understand, however, that rather than a system being the “sum of its parts”, it is a “collection of parts which interact to *function* as a whole”. (Kauffman)

3. LEARNING TO RECOGNIZE ARCHETYPES OF SYSTEMS:

WARNING: Students need to discover the basic rules of how systems work in order to understand that political systems and ecological systems work on the same principles.

4. LEARNING TO RECOGNIZE CAUSAL LOOPS OPERATING IN SYSTEMS:

WARNING: Students need assistance in developing the mind-set “to look for interdependencies and feedback within systems”. (GIST)

5. LEARNING TO UNDERSTAND THE PROCESS BY WHICH ACTIONS ARE PROMPTED BY BELIEFS “WHICH ARE BASED ON CONCLUSIONS INFERRED FROM OBSERVATIONS PLUS EXPERIENCES”.

(adapted from *FIFTH DISCIPLINE FIELD BOOK*, p.242, Rick Ross)

WARNING: Students need practice with applying the LADDER OF INFERENCE to personal actions as well as historical events.

WHICH SEQUENCES OF EVENTS IN HISTORY OPERATE AS A SYSTEM?

WHICH ERAS HAVE PRODUCED AUTHORS WHOSE WORKS HAVE BECOME CLASSIC EXEMPLARS OF THE DOMINANT PHILOSOPHY OF THE ERA?

1. Take all like-events in the history of a nation, e.g., U.S. Wars:1776-1996, and study the patterns of behavior to answer the question: “Why does America go to war?”
2. Take a time period in the history of a nation, e.g., Westward Territorial Expansion of the U.S.:1780-1880, and study the impact of the Doctrine of Manifest Destiny on societal factors which influenced this movement.
3. Take a concept and analyze the effect of historical events on it, e.g., The Changes in the Role of Women in American Society.
4. Take a topic, e.g., The Holocaust:1930-1945, and read the literature about the era to study the “Impact of Bigotry on Humanity”.

WHEN IN A YEAR'S COURSE OF STUDY CAN YOU USE AN ST/SD UNIT?

1. In the normal flow of a Georgia Studies/U.S. History Course, when it's time to study the American Revolution, take four weeks to study all of the major American wars as a unit to answer the question: Why does America go to war?
2. When it is time to study the Louisiana Purchase/Lewis & Clark Expedition, take three-four weeks to study the factors in operation in the U.S. which motivated the Westward Territorial Expansion of the U.S., 1780-1880. Review the settling of the Original Thirteen Colonies in light of the Doctrine of Manifest Destiny, then assess its impact on territorial expansion of the U.S.
3. When the timeline rolls to the Twentieth Century, take three weeks to review the events of the Nineteenth Century and how women reacted to these events to affect changes in the role of women in our society. Then, as an ongoing study, canvass the Twentieth Century for events which might predictably impact women.
4. In literature, especially in conjunction with the historical studies, the tools of Systems Thinking can be used with individual selections. The tools can be used effectively with groups of selections combined to demonstrate a concept, e.g., The Language of War; Literature of the Holocaust.

WHERE CAN YOU AND YOUR STUDENTS ACCOMPLISH THIS?

For most teachers, the classroom is the principal site, with safaris into the computer lab.

GENERAL PROCEDURES:

1. Prepare method of grouping students for group inquiry.
2. Pull into your classroom, as many as possible, printed resources, fact and fiction, dealing with the topic.

SPECIFIC PROCEDURES FOR UNITS:

1. For the war unit, the classroom can be made to look like a strategic planning war room complete with 1-2 computers, wall maps, timeline, posters, and packets of trade book materials on each war era.
2. The classroom can be marked with tape into two, six feet by ten feet Conestoga Wagons for following the Oregon Trail west, on completion of the westward territorial expansion study. The timeline with influential factors and western scene pictures is already in place.
3. The classroom can be divided into sections to represent state legislatures, the U.S. Congress, suffragette headquarters, military recruiting office for the role playing/study of the changing role of women in our American society. The bulletin board can display 19th and 20th century timelines.

HOW TO IMPLEMENT AN ST/SD UNIT?

NOTE:

THE TOOLS OF ST/SD UNITS BLEND NATURALLY WITH THE INTERDISCIPLINARY APPROACH TO INSTRUCTION.

- A. In LANGUAGE ARTS: drama, journals, speeches, posters
- B. In SOCIAL STUDIES: group inquiry, debate, predictions, societal factors
- C. In MATH: graphs of trends, statistics, timelines
- D. IN SCIENCE: weather, land forms, inventions

SPECIFIC SUGGESTIONS:

1. Prepare a packet of printed material for each student group.
2. Present a dramatic lead-in to the unit to engage students' interest.
 - A. Re-enact the Boston Tea Party as lead-in to war unit.
 - B. Hold town meeting with teacher dressed as U.S. Land Agent or Wagon Master to discuss reasons for going West.
 - C. Arrange for a group of girls to march into class carrying placards and demanding the right to enter the state university. It is the 1800's and females are not allowed entrance to the hallowed halls of higher education. The ensuing debate initiates the study of women's role and/or rights in society.

WHAT ELSE? The use of ST/SD TOOLS in these units.

FIRST RULE OF THUMB: DON'T RE-INVENT THE WHEEL!

SECOND RULE OF THUMB: DO ADAPT THE WHEEL TO MOVE YOUR CURRICULAR VEHICLE FORWARD!

1. COMPUTER MODELS GIVE STUDENTS A CHANCE:

- TO ASK “WHAT IF...?” QUESTIONS
 - TO PREDICT THE OUTCOME OF THE ANSWERS TO THE QUESTION
 - TO SEE THE OUTCOME OF THE PREDICTION ON THE MODEL’S GRAPH
- A. “THE GIVER” is an excellent model to use with students at the start of a school year to demonstrate the need for RULES. A synopsis of *THE GIVER* society (*THE GIVER*, Lois Lowry) is all that is necessary for a week’s unit on class/school rules.
(Model created by Catalina Foothills School District, Tucson, Arizona)
- B. “AMERICAN REVOLUTION” model works well at the start of the U.S. Wars Unit. This model allows students to see how people’s reactions to events create patterns of behavior. The entire class studies the American Revolution model as a model for the study of the major conflicts in U.S. History. (Model created by GIST)
- C. “WAGON TRAIN” model is used effectively upon completion of Westward Territorial Expansion of U.S., 1780-1880 Unit. This model is designed to demonstrate the importance of a high level of COMMUNITY SPIRIT to the successful completion of a wagon train’s arduous journey from Independence, Missouri to the Oregon Territory.
(Model created by GIST at Trinity Institute, Summer 1997)

- D. “SOCIETY’S ALLOWANCE vs. GROUP’S PERCEPTION” model can be used to study the assumption that society, in general, assigns roles to a specific group according to the value it allows the group in the managing of society at any given time in its history. Using the timeline of the women’s suffrage advancement, students use the model to predict how the group’s (women’s) perceptions of its own worth changed.
(Model created by GIST at Trinity Institute, Summer 1998)

2. BEHAVIOR OVER TIME GRAPH (BOTG)

This ST/SD TOOL allows students to examine, on a timeline or a graph, a behavior/variable over a series of events.

- A. BOTG is used with the American Revolution model to reveal the build-up of anger in British and Colonial partisans as events occurred.
- B. In the study of World War II and the literature of the Holocaust, BOTG’s can be used effectively in several ways.
- To trace the relationships between Hitler’s rise to power, Germany’s military strength, and the persecution of the Jews.
 - To look at tension between the characters as the fear of discovery increases in *The Diary of Anne Frank*.
- C. BOTG can be used to chart the return of Buck’s “primordial instincts” in *The Call of The Wild*.
- D. BOTG can be used to illustrate the overland trail emigration numbers from 1840 to 1880.

3. CAUSAL LOOP DIAGRAMS AND STOCK-FLOW DIAGRAMS

These diagrams demonstrate how a system works and how the pieces interact with each other. These diagrams are most effective when used in the de-briefing culmination of a unit of study.

- A. These diagrams allow students to see graphically the outcomes of their predictions.
- B. Study of these diagrams helps students identify leverage points when the predictable outcome might have been changed

EXAMPLES:

- 1. At the end of the American Wars Unit, the use of these diagrams enables students to achieve an overview of the causes of armed conflict; to discover commonalities among the wars, as much as a century apart, as to causes; to recognize leverage points in the sequences of events wherein the outcome might have been changed.
 - 2. In the Westward Expansion Unit, use of the diagrams helps students look for the interdependencies and feedback between the variables which motivated U.S. expansion, e.g., immigration, population growth, Doctrine of Manifest Destiny.
- C. Examination of CAUSAL LOOPS provides students a method of applying learnings to real-life situations.
- 1. From the study of the Wagon Train community
 - a) Students learn to estimate the effect of the feeling of community on behavioral decisions and patterns.
 - b) The concept of community is important in helping students to apply information and intuition toward better real-life decisions.
 - 2. From the study of the dynamics of conflict
 - a) Students learn to look for leverage points for conflict resolution in U.S. History.
 - b) In the best-case-scenario, students begin to make the transfer from history to the resolution of their real-life conflicts.