Research, Consultation, & Teaching Program
Research Report No. 8

Content Collaboration in Middle Schools: A Case Study Supporting Instruction in Critical Thinking Skills

Sandra McCollum
Gerald Tindal
Victor Nolet

University of Oregon College of Education, Behavioral Research and Teaching,
Eugene, Oregon, 97403-1215

Published by
Research, Consultation, & Teaching Program
Behavioral Research and Teaching
College of Education
University of Oregon

Staff
Gerald Tindal, Program Director
Jerry Marr, Editor
Abe Deffenbaugh, Assistant Editor

McCollum, Sandra; Tindal, Gerald; Nolet, Victor
Content Collaboration in Middle Schools: A Case Study Supporting Instruction in Critical Thinking Skills
Research Report No. 8

Preparation of this document was supported in part by the U.S. Department of Education, grant number H029B20030. Opinions expressed herein do not necessarily reflect the position or policy of the U.S. Department of Education, and no official endorsement by the Department should be inferred.

Layout: Jerry Marr
Cover design: George Beltran

Content Collaboration in Middle Schools: A Case Study Supporting Instruction in Critical Thinking Skills

Sandra McCollum
Gerald Tindal
Victor Nolet

University of Oregon

This research report discusses methods for providing mildly handicapped students an appropriate educational program in secondary content classrooms. A variety of consultation models are currenly used to support mainstreamed students in the content areas. While these are advantageous in helping some students, they have limitations in their potential impact and effectiveness.

This case study describes a new collaborative relationship between content and special education teachers where content information is restructured to be more appropriate for all students, particularly for special education students. In describing a way to meet the needs of secondary special education students in content areas, this report includes a review of current interactive models of consultation and a description of an alternative model, an intervention that supports this case study, with concomitant results from the intervention, and, finally, implications for the content classroom.

Mildly handicapped students can be mainsteamed into regular content classrooms with collaborative efforts between the content and special education teachers. Results of this study indicate successful collaboration can occur between teachers. In addition, mainstreamed students can be provided a more appropriate program when the curriculum is restructured to highlight critical information and when strategies are developed linking instruction with meaningful assessment. Restructuring the content classroom can assist students in meeting teacher demands and expectations and in achieving success.

Models for Serving Students with Disabilities

Since enactment of Public Law 94-142 in 1975 and its reauthorization in 1991, much progress has been made in providing handicapped children appropriate educational programs. However, upon close examination of current practices in special education, problems exist within the educational programs provided to students and their appropriateness for each individual (Will, 1986; Graden, Zins, Curtis, & Cobb, 1988). Special education resource room programs that focus on remediation of basic skills have resulted in many students being denied the opportunity to participate in content area classes (Ellis & Lenz, 1990). Regardless of skill deficit, schools also are being challenged to provide special services in the regular classroom to support mainstreamed students (Will, 1986; Reynolds, Wang & Walberg, 1987). However, instructional modifications must be made in the regular classroom to accommodate these students if mainstreaming is to be truly effective (Baker & Zigmond, 1990).

This report examines consultant-centered interactive models currently operating as either pull-out or inclusion models and describes a collaborative model of partial supplemental services that is responsive to the needs of individual students. Supplemental services can be developed through a collaborative effort between special and regular education teachers. Instructional strategies can support special education students by promoting thinking skills necessary to succeed in content classrooms to ensure a broader understanding of the content area (Nolet & Tindal, 1992).

Pull-out Model

The pull-out model of special education is currently the most widely used method for delivering basic skills instruction to students with special needs (Deshler, Lowrey, & Alley, 1979). Students are provided their academic classes in a special education setting, whether a resource room or a self-contained classroom; special education teachers are responsible for instruction in all the basic skills areas. Learning strategies also are taught to help students succeed outside the special classroom (survival skills, instruction on learning strategies, time management, organizational skills, and actual content area instruction).

Students who are scheduled into a resource program to remediate basic skills often miss out on content instruction by a content teacher (Ellis & Lenz, 1990). The special education teacher is often responsible for delivery of the content information (McKenzie, 1991). It is assumed that content information taught by special education teachers in a resource or self-contained setting is a viable alternative to receiving instruction in the content classroom. Brief and infrequent meetings are used to elicit information from the content teacher such as curriculum and classroom requirements. However, McKenzie (1991) and Patton, Polloway and Cronin (1987) argue that special education teachers lack the training and expertise to instruct students in the content areas. Even though content instruction by special education teachers is due to students failing to succeed in content classes or because of poor scheduling, this does not justify the alternative content being taught in a resource room. As a result, students who require the best instruction are not receiving content instruction from the teacher who has the most training and expertise in the area.

In elementary schools, scheduling for basic skills remediation can parallel the same instruction in the regular classroom. However, when students reach middle school and reading instruction is no longer a part of the daily schedule, a student must be pulled from some other class to receive remedial reading instruction. Therefore, students are often pulled out of a content class, which may last all through the course of middle school; when the student reaches high school and is faced with a content class again, s/he has little or no knowledge base from which to draw. This type of program puts the student at an unfair disadvantage, especially those with special needs who have poor academic skills. Basic skills may be important at the middle school level as they are a necessary prerequisite to succeeding in the content classes, but not to the exclusion of content instruction by a content teacher. However, the most significant problem with this model is that the student is the primary focus for change in basic skills remediation classes. The environment and curriculum are rarely the targets for change, where classroom and instructional modifications are considered to help provide success to the special education student.

Inclusion Model

Within an inclusion model, students are mainstreamed on a full-time basis, where special education services and classroom modifications are expected to continue supoprting the student in the regular education classroom. However, research (Anderson-Inman, 1987; Baker & Zigmond, 1990; Kearney & Durand, 1992) indicates significant problems with this model:

1. Diagnostic criteria for placement of students into mainstream programs are unclear.
2. No clear description of the changes necessary to support mainstreaming exist, i.e. teacher training and instructional modification.
3. Improved collaboration methods are needed to improve communication between special and regular educators

Although special education students may be placed in the mainstream, in content classes, they may sense exclusion because of the demands of the classroom, which their abilities do not meet (Deshler & Schumaker, 1988). Such demands include the use of many strategies to interpret large amounts of printed material, memorization, and expressing learned information. It is inappropriate to place a special education student in a mainstream classroom with little or no support and expect him/her to succeed. However, through an effective working relationship between the special education and regular classroom teachers, students can succeed and perhaps perform as well as their non-handicapped peers. Teachers can apply special instructional techniques in settings other than resource rooms or self-contained classrooms so that success can be achieved by students in the mainstream (Will, 1986; Idol, 1989).

Consultation Intervention Model

In contrast to the pullout or inclusion models, consultation intervention methods have been described in three ways: (a) the medical or diagnostic-prescriptive perspective, which examines and attempts to treat the cause of the learning problem, (b) the behavior perspective, which focuses on what the teacher and student do, and (c) the interactive perspective, which utilizes interpersonal strategies to meet environmental demands. Regardless of the method selected, consultation should remain an effort to alter the factors that govern a situation, whether causally, behaviorally, environmentally, or instructionally. Although the medical, behavioral, and interactive perspectives have been effective in decreasing disruptive student behaviors and improving academic achievement (Jason, Ferone &

Anderegg, 1979; Conoley & Conoley, 1982), they lack specific procedures for restructuring the form and use of knowledge in content classes. Following is a discussion of the interactive models of consultation currently in use. They, like the proposed model, offer supplemental instruction that focuses on academic achievement for special education students in the content classes. The goal is to prevent educational failure in the mainstream through effective collaboration between content and special education teachers.

Curtis and Meyers (1988) describe consultation as an interactive process between two colleagues that focuses on solving some problem. The colleagues, a special education teacher and a regular classroom teacher, clarify student needs and develop appropriate intervention strategies to meet classroom demands. The strategies take a number of forms currently in use with the interactive consultation model: providing tutorial services, instructing in teacher pleasing behaviors, fostering learning strategies/study skills, providing instructional strategies, and teaching basic skills. The purpose of the intervention is to help the special education student meet the demands of the mainstream classroom, where the consultant is integral to the delivery of direct services. A brief description of the interventions follows.

Tutorial Services

A common approach used with special education students is tutoring. The objective of tutoring is to help students succeed in the mainstream with a focus on attending to the regular class needs and receiving a passing grade. For students who require extra assistance with classroom demands, tutoring can be effective in maintaining student progress. A little extra support is sometimes all a student needs to be successful. This support can be in the form of additional time to complete assignments, help studying for tests, or reviewing lessons. However, Polloway, Patton, Epstein and Smith (1989) have described some disadvantages of tutoring: irrelevance to students' future needs, special education teachers under-training in content areas, and focus on short-term objectives. Although tutoring can enhance a student's progress in the mainstream classroom, it could be a service provided by someone other than a highly trained consultant, such as a teacher's assistant.

Learning Strategies/Study Skills

Learning strategies have been used to promote student independence and success in mainstream classrooms by following a set of steps to work through a problem (Ellis, Lenz, & Sabornie, 1987). For example, a student might be taught how to prepare for a test, how to identify relevant information from the text or lecture, and how to then organize it to facilitate memory. Students' knowledge of critical skills, information, and motivation are related to the use of learning strategies, the lack of which may undermine their efficacy performance in the content classroom. The prerequisite skills required to use learning strategies may present a problem for special education students. For example, in the Paraphrasing Strategy (Ellis, Deshler, Lenz, Schumaker, & Clark, 1991), instruction must be preceded by a related skill, i.e. paraphrasing one sentence. To teach the Sentence Writing Strategy, students must first learn how to identify subjects, verbs, and prepositions. In the First-Letter Mnemonic Strategy (Nagel, Schumaker, & Deshler, 1986), students create lists of information to memorize for tests. In a study by Mastropieri, Scruggs, McLoone, and Levin (1985), a mnemonic technique using keywords and picture associations proved more effective with learning disabled students than direct instruction or free study. Although these strategies exist to help students organize or cluster material, the process is difficult and time consuming, even for teachers given the wide use of poor quality curriculums.

In summary, although learning disabled students can use learning strategies effectively and increase classroom test scores (Deshler, Schumaker, Lenz, & Ellis, 1984), in order to use many of these strategies students must have acquired a certain level of basic skills and independent functioning to execute the behaviors. Another limitation is that strategies learned in one setting are not always generalized to other settings.

Instructional Strategies

Special education students often cannot meet the demands and expectations found in the regular education environment (Deshler, et al., 1984). Therefore, instructional strategies that teachers can implement in the mainstream classroom are essential to the success of mainstreamed students and can be utilized as alternatives to traditional instruction and techniques. Ideally, special education and content teachers work together to create these alternatives. Ellett (1993) lists seven factors essential to the intervention: (a) supplemental resources (films, additional materials, community resources), (b) simplifying instruction (small steps, modeled steps), (c) providing support and extra instructional cues (peer tutoring, intervention strategies), (d) enhancing classroom behavior (motivational techniques, high engaged time, individual feedback), (e) facilitating grade improvement (preparing for tests, alternate forms of tests), (f) modifying learning environments (distraction free areas), and (g) teaching study skills (organizing information). Further instructional strategies that match the student's strongest learning modality with the method of instruction are described by Mosby (1980). They include taping lectures, reading

a chapter aloud and orally presenting ocedures highlight text and lectures.

With all these instructional strategies, the question remains: Is what we are highlighting the most important information to gaining an understanding of the subject or just the same material (with much irrelevant information included) presented in a different manner. The focus needs to be on what the student is learning and if s/he is gaining a clear and usable understanding.

Basic Skills

Idol (1989) describes a resource/consulting teacher (R/CT) model that combines direct, resource services and indirect, consultative services. Indirect problem-solving support is offered to teachers of mainstream students, while direct services are provided to promote success with curricular materials. The focus is on remediating basic skills through direct instruction techniques (Carnine & Sibert, 1979). In the manipulation of curriculum materials or instruction, the emphasis is on basic reading, writing, and math skills. Yet, the curriculum must be questioned and modified to accommodate special education students' deficiencies effectively. It may not be enough to focus on basic skills, however, when research indicates the failure rate of special education programs at the secondary school level (Zigmond, 1990).

All of these interactive models of consultation (tutorial services, teacher pleasing behaviors, learning strategies/study skills, instructional strategies and basic skills) include techniques that have some positive implications for special education students in the mainstream. Other, more specific procedures may be necessary for restructuring the form and use of knowledge in content classes. In particular, teachers (general education content and special education) need to identify specific strategies for delivering content information to all students and realign how learning is monitored.

Content Collaboration Model

The proposed model is based on the assumption that special education students should be included in content classrooms (not excluded because of basic skills remediation or scheduling problems), *and* they should not receive content instruction without the content teacher's expertise. Accommodations may be necessary to support these students within the content classroom or with a partial supplemental program by a special educator.

Current conceptions of education are derived from the theories of behavioral psychology of the 1960's, when learning-specific skills and behaviors predominated (Cole, 1990). This resulted in our current practice of teaching specific, separate, basic skills and facts, enhanced by educational measurement practices. But what we expect of educational achievement may not meet the needs of students once they leave the educational environment. A storehouse of memorized facts will not in itself serve a person's needs after leaving school. It would be more useful to possess the skills to organize information and use it in solving some problem or in applying it to a real-life situation (Tindal, Nolet & Blake, 1992). The achievement of critical thinking or problem-solving skills will not only help in acquiring information, but in using that information for some purpose, and in experiencing the interrelationship of things. Although it is possible for students to gain important facts as part of the process of learning how to think, problem solving is an effective way to organize and use these facts. Interrelating information within a purposeful function should help all students develop the skills necessary to meet the demands of the future.

The proposed model delineates a method for restructuring the secondary regular education classroom to more adequately meet the needs of special education students and provide for successful learning within the content classroom. Collaboration encourages a working relationship between the special education and content teacher to utilize their unique skills and understanding. Although this model provides support to students via consultation, it suggests a restructuring of curriculum and instruction rather than continued use of traditional curriculum and content instruction. It takes the resource/consulting teacher model of subject matter tutoring on parallel curriculum (Idol, 1989) one step further by restructuring and supplementing content curriculum and focusing on the variables associated with achievement (Nolet & Tindal, 1993). Because curriculum should emphasize thinking, problem solving, and reasoning (Carnine, 1991), this model incorporates an instructional process that emphasizes higher order thinking (e.g., illustration, evaluation, application and prediction) through the application of specific knowledge forms (facts, concepts and principles) within the content classroom. This model suggests a correlation between student achievement and instruction focused on knowledge forms and the use of higher-order thinking and proposes a means of meeting the needs of special education students in content classrooms (Nolet, et al., 1993; Cole, 1990). Success can be achieved meaningfully by employing a framework that goes beyond accumulation of information to use knowledge forms (information) in the service of critical thinking (intellectual operations).

Students who are mainstreamed into a content classroom can be effectively supported by establishing a working relationship between special education and content teachers. Because the curriculum is the most

widely used source of information in a content classroom, it becomes the key in promoting success for mainstreamed students. The typical content curriculum is heavily laden with factual information and lacks clearly presented concepts and principles (Tindal, et al, 1992). Content teachers often present information in a lecture format with few interconnections made among facts . Many special education students are unable to meet the demands of this type of curriculum and instruction. But, by focusing on the "sameness" or interrelationship of concepts and principles, curriculum can be organized effectively and all students, not only special education students, can gain a greater understanding of a content area (Carnine, 1991). Special education students may have deficits in basic skills (reading, language arts or math), but these are not due to problems of intelligence or an inability to engage in higher-order thinking. Curriculum materials can be reorganized to highlight the most important concepts and principles, which can then be taught in some manner despite basic skills deficits. It is important to hold high expectations for all students (Carnine, 1991), and to acknowledge the special education student's thinking skills rather than focusing on weaknesses in basic skills. Effective interventions incorporating higher order thinking and problem solving can provide an opportunity for students to reach goals, something that may never occur with a focus limited to improving basic skills.

Implementation

The content collaboration model can be implemented within the content classroom through a non-traditional approach to instruction with a special education teacher providing supplementary pull-out or inclusive instruction. The special education teacher and the content teacher form a working relationship where the content teacher determines the most important information to be learned and formats it by identifying critical concepts and principles. The special education teacher then assists in organizing the content information and also provides supplementary instruction.

The content reorganization is achieved through a collaborative effort which focuses on curriculum, instruction, and assessment. Curriculum is restructed through the use of a content planning form to determine key concepts and principles within a unit. Instruction is modified to include graphic organizers or instructional techniques that highlight the information essential to understanding. Assessment is linked to instruction by requiring students to manipulate the key information in some manner that indicates true understanding.

As with most consultation models, administration support is essential in the scheduling and implementation of various services. Also, because teacher attitudes have been shown to promote failure of learning disabled students (Zigmond, Levin & Laurie, 1985), it is important that teachers look beyond the basic skills deficits of the special education students and focus on their ability to think and reason.

The remainder of this report focuses on a case study in which all of the important components of content collaboration are fully explained. In this case study, a content planning form is used to highlight important knowledge forms deemed critical by the content teacher. Once a student at risk of failure is identified, a schedule is organized to allow the student to be provided supplemental instruction without disrupting his/her content learning in the classroom. The student is pulled out during non-critical class times each week to receive instruction from the special education teacher on knowledge forms taken directly from the content planning form. Practice using intellectual operations to manipulate information is a part of the instruction. The student's progress is monitored by analyzing use of information within various problem-solving contexts and finally compared to his classmates on a problem-solving essay administered in the classroom. Since the essay requires the use of key concepts and principles, it can be used in lieu of a typical assessment measure and indicates meaningful use of information and success in the content classroom.

Development of the Collaborative Process

The collaborative process between a content area teacher and a special education teacher begins with the development of a Content Planning Sheet. The planning sheet is first implemented and represents the most critical information for the content and special education teachers to use during instruction and as criteria for student learning in the curriculum. The content teacher first determines the important knowledge forms in the curriculum, and the special education teacher determines how at-risk students can effectively learn this information. Finally, student progress is monitored through the use of alternative forms of assessment which require students to manipulate the critical information, linking instruction with assessment.

To determine the most important information within a unit, the content teacher scans a unit of text and lists, on the planning sheet, those concepts and principles that s/he feels are essential to understanding. The information contained in the text is organized into broader concepts and principles rather than an exhaustive series of facts, common with many widely used content curriculums. Specific examples are also listed

that focus the student's attention on the critical aspects of a concept. The planning sheet can then be used as a tool for delivering instruction or for developing graphic organizers which provide a simplified structure for delivering information and can assist students in noting relationships among concepts and principles (see Figure 1 for directions on filling out the Content Planning Sheet).

Directions for Completing Content Planning Worksheet

Complete this planning worksheet for each 2- to 3-week segment of content you plan to teach. This segment probably would correspond to a chapter in the textbook you normally use in the class specified, but it could correspond a entire unit in the textbook, or a few chapters taught together as a short unit, or selected parts of a chapter. However, please refer to a complete segment rather than a specific lesson or set of lessons. For example, if you generally give a test about every two or three weeks (or three or four times a quarter), think of all the material you teach between each test.

Please provide three types of information:
Key Concepts
Important Ideas
Graphic organizer

CONCEPTS

Please use this definition of concept:

- *Concepts are specific words or short phrases that refer to classes of objects or events that share some common defining attributes.*
- *Concepts involve three parts: a label, key attributes, and a range of examples*

1. Please identify the key concepts that you consider critical for understanding the content you plan to teach during the 3-week interval indicated. Learning these concepts would, in your opinion, mark the difference between mastery and nonmastery of the material you will cover.
   List as many concepts as you feel are important, up to ten. Concepts you might target could include terms such as "molecule," "fossil fuel," "holy war," or "vassal." However, specific examples of concepts would not be applicable. For example, the concept "epoch" might be exemplified by "ancient Greece," "ancient Rome," or "the middle ages." These examples would not qualify as concepts according to the definition used here.
2. List one or two key defining attributes for each concept. These attributes would enable discrimination of what is and is not an example of the concept.
3. Provide two or three examples of each concept AND, when possible or applicable, also include non-examples that further aid in discrimination of the critical features of the concept.

IMPORTANT IDEAS

Please list *up to three* ideas that you believe are critical to mastery of the content you will teach. Ideas are more general than specific concepts in that they represent unifying themes or topics. Please focus on ideas contained within the context of a single unit rather than global themes or topics that cut across the entire course. For example, in a unit on fossil fuels, you might want students to understand the idea that "Use of fossil fuels results in environmental damage in the form of increased greenhouse gasses and acid precipitation." This idea would be more context-specific than the global theme, "Humans interact with their environment in a variety of ways, with both positive and negative effects," which could apply to a wide range of applications across a science curriculum.
Please frame the important ideas you want students to learn as complete sentences, rather than a few words or phrases.

GRAPHIC ORGANIZER

Sketch a graphic organizer of the content you will teach that shows the key relationships among concepts and ideas.

Figure 1. Content planning sheet.

Content Planning Worksheet

Date: _____

Teacher: _____

Class: _____

Textbook: _____

Other Curriculum Materials: _____

Approximate Schedule of Content to be Delivered

Week	Dates		Textbook Unit	Textbook Chapters	Quiz Dates	Test Dates
1	From:	To:				
2	From:	To:				
3	From:	To:				
4	From:	To:				

KEY CONCEPTS

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

IMPORTANT IDEAS

1. _____
2. _____
3. _____

Figure 1. Content planning sheet (continued).

Concept Descriptions

Concept	*Attributes*			*Examples /Non Examples*		
1		Page	¶		Page	¶
2						
3						
4						
5						

Notes:

Graphic Organizer

Figure 1. Content planning sheet (continued).

The special education teacher can assist in using the form and eliciting further information (e.g. clarification on concept attributes or examples), developing graphic organizers, and bringing pedagogical expertise to the collaborative process. In this way, roles are maintained and curriculum is manipulated and refined to focus on the most important information, which students can then use for some purpose. Collaborative meetings can be brief and focused when this structured format is utilized; it provides assurance that only relevant information will be taught by the special education teacher. The content teacher's expertise is essential to the reorganization of curriculum and to student success with content information.

Once the most important information is delineated, the special education teacher can schedule support sessions during non-critical class times for those students at risk of failure in the content classes. The support sessions can consist of an individual or a small group of students depending on class schedules and student needs. Using the Content Planning Sheet as a tool for instruction, the special education teacher can effectively develop the necessary components of a support session, for example: (a) direct instruction on concepts and attributes (examples/non-examples), (b) summarization and review of text (discuss principles), (c) graphic organizers (students manipulate), (d) effective questioning (requires use of intellectual operations), (e) writing responses to essay prompts (intellectual operations). The important aspects of curriculum are so refined that pre-teaching, re-teaching, or supplementing content instruction is less time consuming and more thought provoking because the most important information is consistently highlighted and manipulated by the student.

Instruction and assessment are linked, providing continuous information about student progress. Problem solving essays are used to assess the student and his/her ability to use the knowledge forms in some intellectual operation. A prompt is provided which poses a problem the student must solve by drawing on his/her understanding of specific knowledge forms. This same type of questioning and problem solving can be included in the instructional format so students are practicing using information in the service of solving some problem. Achievement is then based on the student's ability to manipulate the learned information. When this type of classroom-based assessment is used, which links measures of performance with instruction, a teacher can determine if the students have learned what s/he wanted them to learn. Therefore, posing problems to students that require the use of intellectual operations becomes not only an important part of instruction, but can be used in lieu of a typical assessment measure and indicates meaningful use of information and success in the content classroom (see student essays).

Case Overview

The purpose of this study was to show that students who were at risk of failing in the social studies content class could achieve some success in the content classroom by providing supplemental services that restructured content information and assessment techniques. The study analyzes a method of teaching and learning in one setting and for two students, one student during the first phase of the study, replaced by another student during the second phase. This study took place in a small middle school in the Pacific Northwest. The following is a description of the intervention developed and how it was implemented.

Students

The subjects selected were both receiving Chapter I services for reading and language arts remediation at the time of the study. The student selected for the first phase was a seventh grade male, and the student selected for the second phase was a seventh grade female. The study was designed around a social studies classroom where both students were experiencing academic and behavioral difficulties. The social studies teacher had previously been involved in a research project that focused on strategies to adapt instruction and assessment to meet the needs of mainstreamed students who were experiencing some level of failure due to poor basic skills (Tindal, et al. 1992). She was willing to continue using the planning methods developed in the research project to organize her lessons and help with this case study.

The intervention took place during the non-critical class times. The students were asked to work with the researcher in a location other than the social studies classsroom for two, 45-minute class periods per week to provide the supplementary instruction. They participated in the social studies class for the remaining three days each week. The intervention consisted of several 2-week projects, during which the students were taught the critical information delineated on the planning sheet and completed several activities using a variety of intellectual operations (illustration, evaluation, application, and prediction) based on the knowledge forms taught (concepts and principles). At the end of each project, the students and their classmates responded to a problem solving essay. A comparison is made between the case study students' progress and that of their peers in the content classroom.

Intervention

The intervention began with the help of the content teacher, who is responsible for determining what information needs to be learned for any specific unit of social

studies. The teacher identified and defined key knowledge forms (concepts and principles) which she felt were most important to understanding the content within each unit. The responsibility of determining the importance of information was accepted by the content teacher because she had the expertise to decide which information was critical for understanding the content; typical special education teacher/consultants do not have the specific training and background in content areas. The researcher, Doris, as special education/consultant in this collaborative effort, suggested limits in the number of key concepts and principles to be presented to students and assisted with the use of the planning sheet. After the planning sheet was completed, an approximate schedule was developed which made it possible to either pre-teach or review important information with the student. Only the information that was critical for understanding the content was taught, so no time was wasted teaching irrelevant information.

The collaborative meetings between Doris and the social studies teacher took place during the second half of her fifty minute planning period once each week. The focus of the meetings was to discuss instructional schedules, clarify the planning sheet, and discuss student progress. Unlike collaborative efforts that have a sense of being mandated and often produce efforts that are less than successful, this method focused on specific knowledge forms, content instruction, and scheduling rather than specifics about student behavior or weaknesses.

After Doris received the planning sheet, the instructional planning took place. Through the collaborative effort where specific concepts and principles were selected, the information was organized within an instructional theme. Selection was based on the importance to content understanding and the amount of time the teacher spent covering the knowledge forms during instruction within the content classroom.

COMPARE-CONTRAST MATRIX

	EMPIRE	REPUBLIC
Attribute 1	rule by king	run by elected officials
Attribute 2	no citizens involved in decision making	citizens elect a group to make decisions
Attribute 3	many different places & people	people more centralized

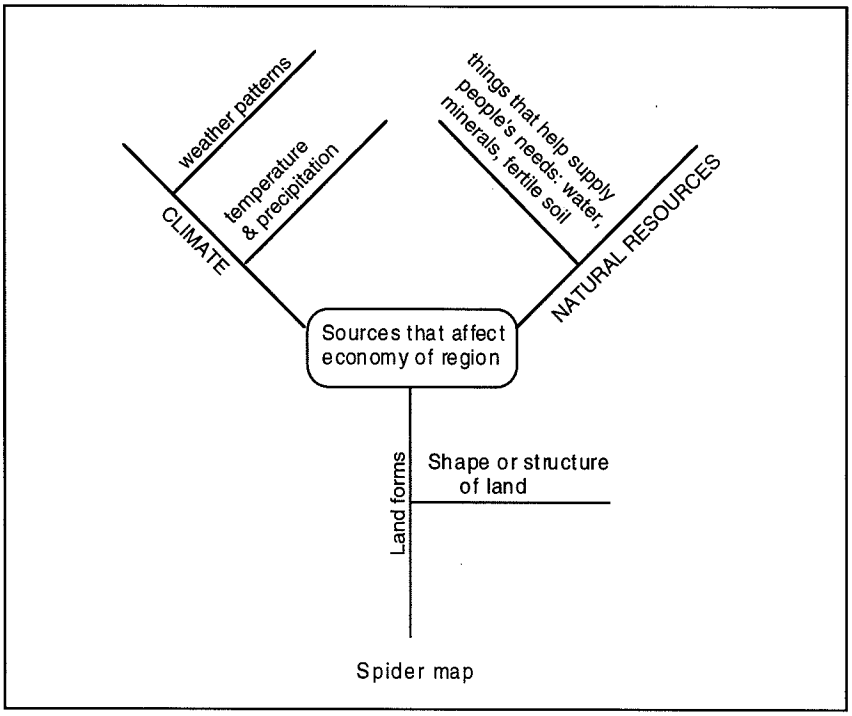


Figure 2. Compare-contrast matrix.

The first step for this intervention was to design instruction to directly teach the concepts and attributes. A heavy emphasis was placed on examples and non-examples which had been provided by the content teacher or elicited through the collaborative meetings. The examples focused the students' attention on the dimensions of a concept, while non-examples act as a means of discrimination. The text was used to extract additional information to be presented using a story type of conversational language which paralleled the information covered by the content teacher as much as possible, although not consecutively. Principles were discussed and applied in different contexts. Graphic organizers were periodically used to provide a framework for teaching concepts and attributes in a simplified structure for delivering information and to assist the students in noting relationships among concepts and principles (Figure 2).

All information was delivered using interactive instructional techniques where information was delivered in the service of solving some problem. Interactive questioning was used to explain new content and to practice using the information as it was presented. This method was effective and sensitive to the needs of these particular students, as with other special educations students.

Every effort was made to challenge the student to think and draw on his knowledge and experience of a specific concept or principle. The student was provided repetitive instruction until a solid understanding of a concept or principle was gained, and then an effective questioning strategy was applied that prompted the use of information and personal background knowledge to solve a problem that had some relevance to life and historical patterns. As a result of this process, two students were motivated to think and respond.

While instruction was provided around the key knowledge forms and relationships, the opportunity to practice intellectual operations also was included. The instructor posed a problem and the use of intellectual operations was modeled for solving the problem. Next, the instructor lead the students through a similar process and provided an opportunity to practice using the operation. At the end of approximately a 2-week period, the case students were practiced the skill independently along with their classmates and without any direct support from Doris or the content teacher. A direct link between instruction and assessment is indicated by the students' essay responses, as described in the next section. Furthermore, a graphic comparison is made between the students' progress and that of their peers in the content classroom (see Figure 9). The results reflect the students' facility and improvement in manipulating acquired information and using higher order thinking skills.

An opportunity to practice knowledge forms (concepts and principles) also was provided through direct instruction and during discussions for approximately 20 minutes of each 45 minute session. The remaining time was devoted to (a) modeling and practicing information manipulation in one of the intellectual operations and (b) providing feedback to the students on their problem solving skills and ability to use rational thought based on experience with the knowledge forms. For example, on an evaluation question, the criteria were (a) making a clear choice, (b) providing reasons for the choice, (c) providing arguments against the non-choice(s), (d) and using factual information correctly. The Evaluation Scoring Flow chart is illustrated in Figure 3. Feedback provided the student with observable evidence for a well reasoned and acceptable response and what was not acceptable about a response.

In this case study, criterion-referenced standards were anchored to the interactive learning tasks or intellectual operations previously noted. Specifically, six different tasks or operations were considered: (a) reiteration, (b) summarization, (c) illustration, (d) prediction, (e) evaluation, and (f) application. Student performance was assessed by analyzing work products and ascertaining their presence. As mentioned previously, an opportunity to practice using intellectual operations to manipulate knowledge forms was used as part of instruction. This practice resulted in a number of sub-products, or problem-solving essays, written by the case students during each two week project. A classwide essay was administered at the end of the two week projects to compare the case students' proficiency using concepts in some intellectual operation with that of their peers.

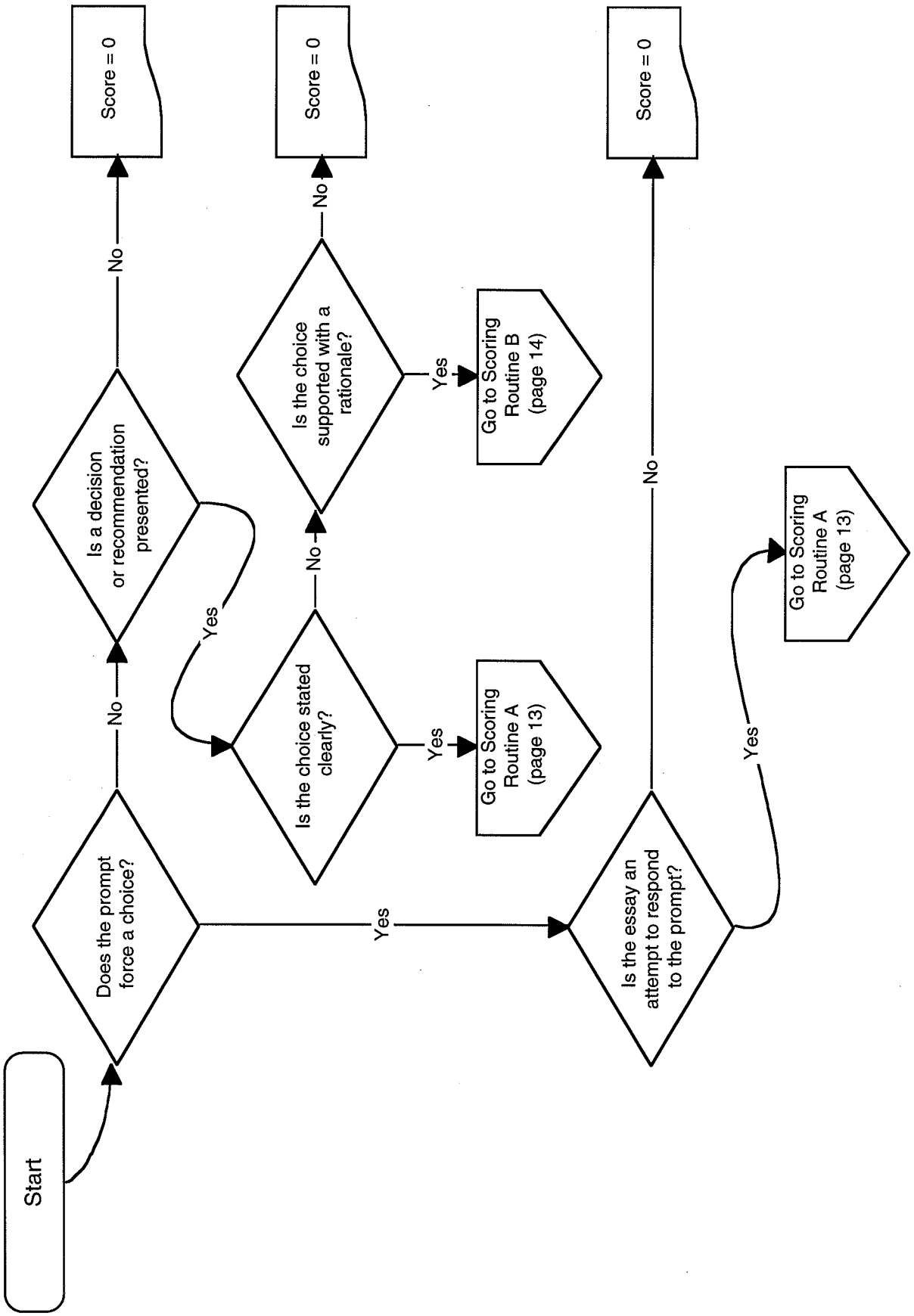


Figure 3. Scoring flow chart (continued).

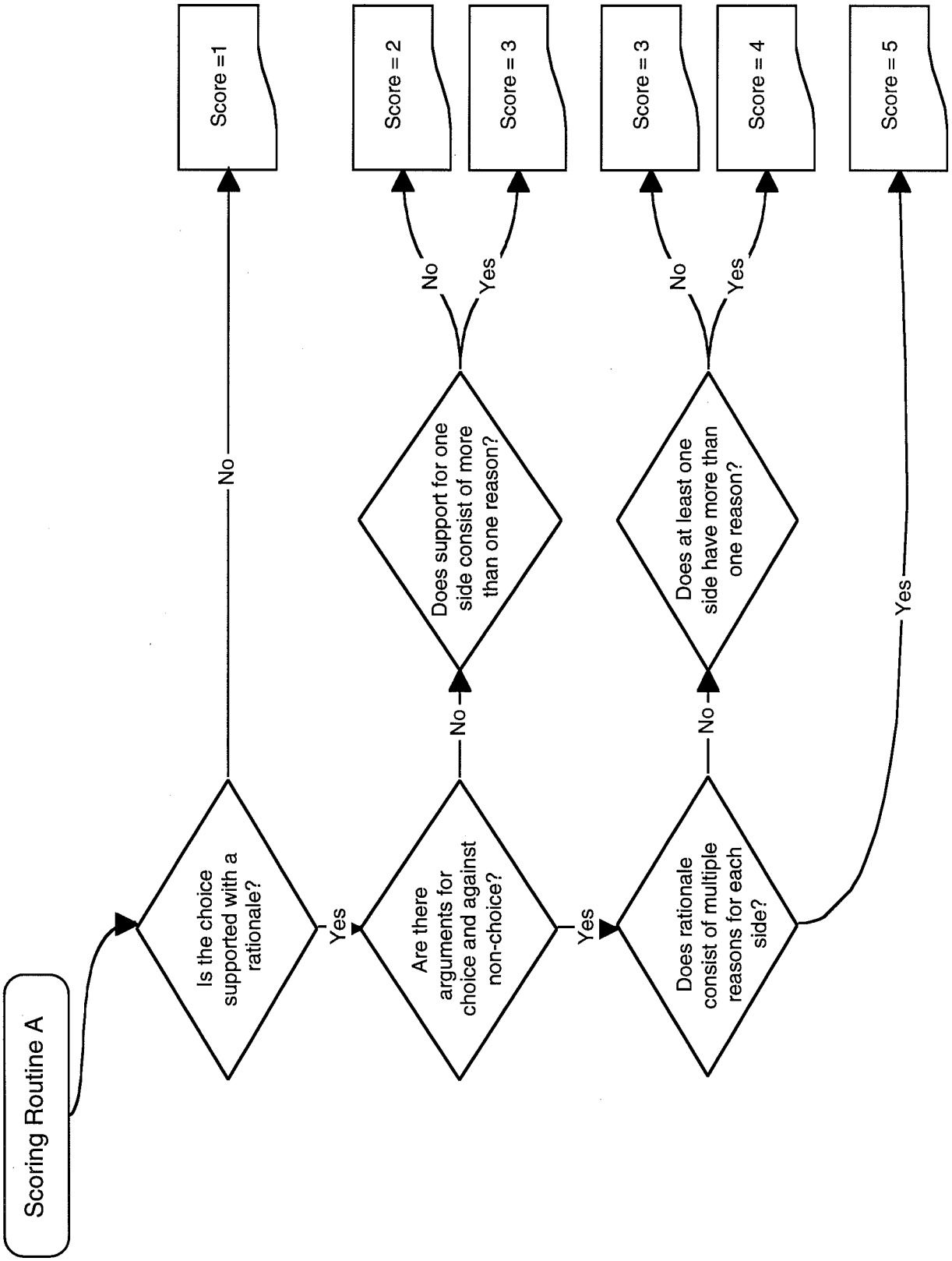


Figure 3. Scoring flow chart (continued).

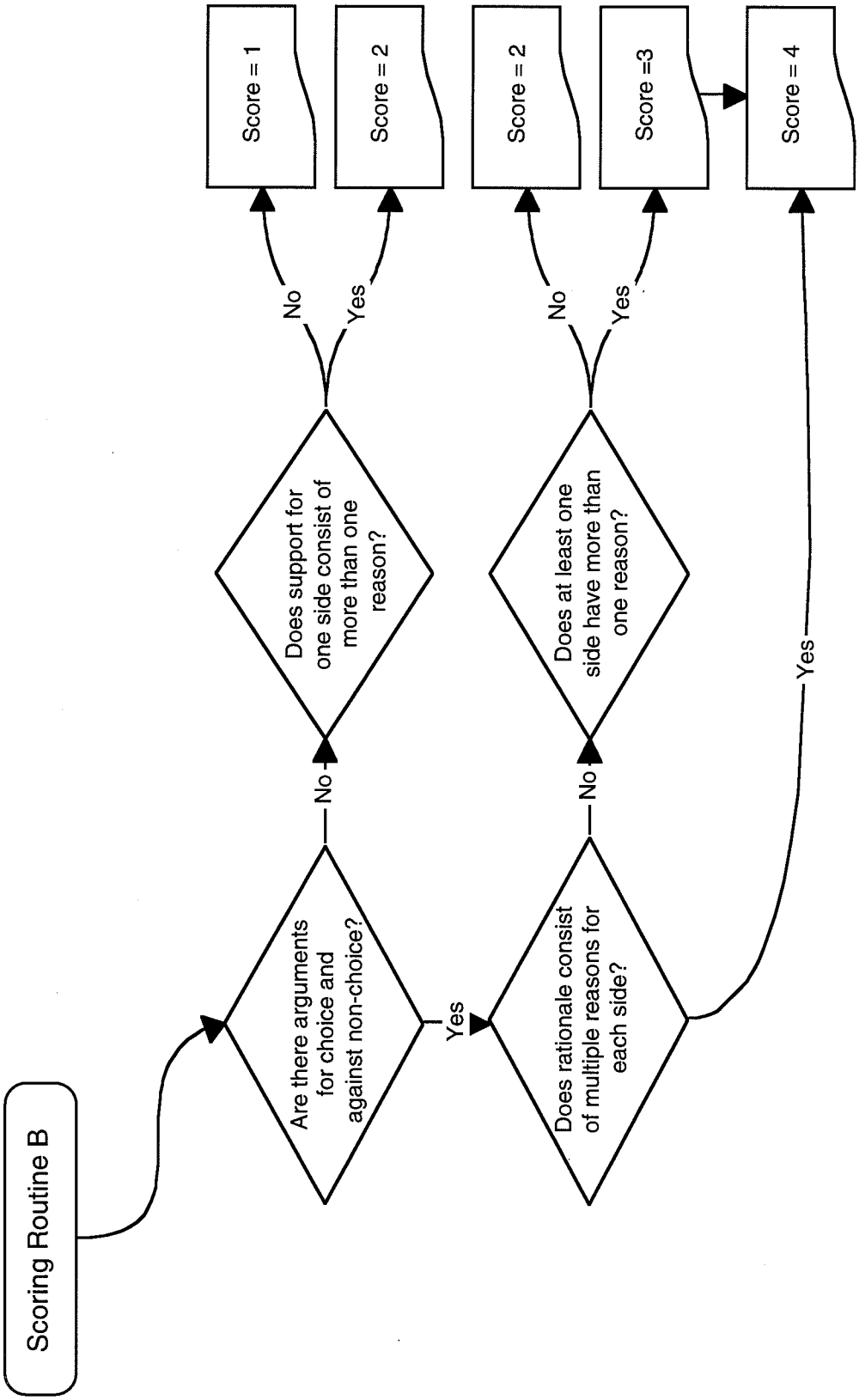


Figure 3. Scoring flow chart (continued).

Intervention and Results

Phase 1 (Tom)

The first phase involved the male student, Tom. The project began with a unit on Greece and Rome. Doris taught the concepts, using specific examples, directly from the planning sheet. An Individual Student Contract was developed to delineate the activities for each two week project (Figure 4). Once Tom had an understanding of the critical concepts, he was asked to respond to a number of prompts that required the manipulation of knowledge forms in some intellectual

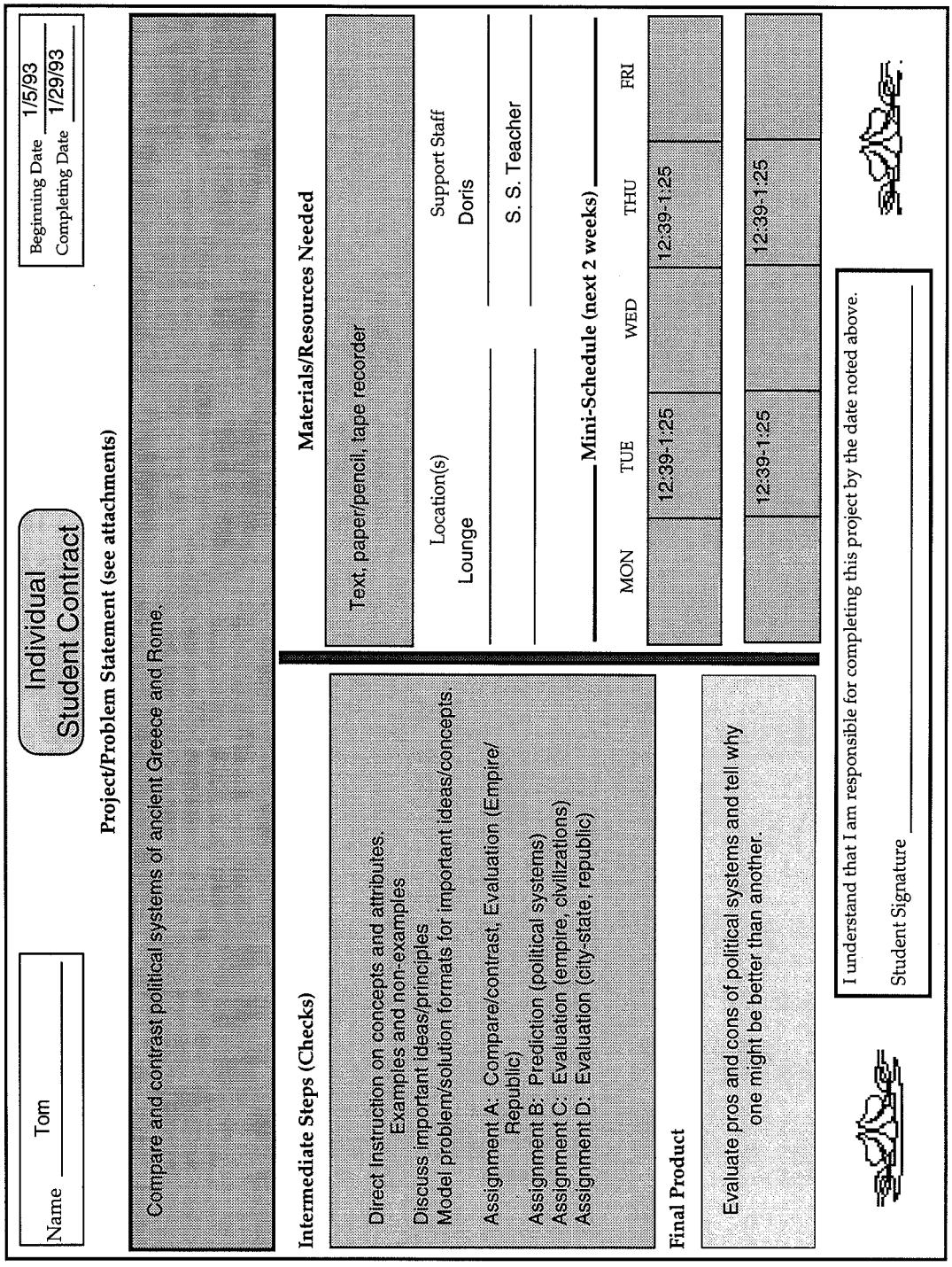


Figure 4. Individual Student Contract for Tom.

operation. Approximately 2-4 of these subproducts were produced by both case students during each two-week project. Although ratings indicate no growth on Tom's classwide essays, growth on his ability to manipulate information is evident in his sub-product responses. However, it was necessary to remain focused on concepts and principles when working with Tom during the instructional phase and to supplement this with information from the text only for further clarification. In the following subproduct, Tom was asked to make some decision and explain his reasoning about some specific concepts, in this case political systems. Although a decison was made, he gave minimal explanations for the concept selected. The essay prompts are in the form of story starters.

Tom made a choice based on his knowledge of the concepts (although the options were not provided in this prompt). He then attempted to make an argument for his choice, although his knowledge of the concept of republic was expressed too vaguely (dont vote for king/republic people are involved). The essay was designed to reflect evaluation responding, although the student had not yet been taught the criteria for judging any of the intellectual operations (later in the study, the criteria for evaluation responding was actually taught to the second phase student and her classmates). Tom was not required to work independently on the subproducts and relied on Doris' support for (a) reading the prompt aloud, (b) eliciting further information by asking if he had more to say, or asking open-ended questions relating to the prompt. This first project did not include a classwide essay; thus, no comparison with the student's classmates can be made. The final three projects for this phase drew from concepts being taught about the Middle Ages (Figure 5).

Once Tom was taught the important concepts for the System of feudalism, he responded to the sub-product below. This essay reflects a better understanding of the concepts taught both by the summarization of the system of feudalism and the evaluation response. The student has made a clear choice and supported it with more than one reason.

Sub-product Prompt and Tom's Response #1 (1/14/93)

A group of people in one area of an empire are dissatisfied with the harsh rule of their king. They do not want their lives ruled by this strict king, but feel the need for some type of system (government) to help make decisions and solve problems for the people. What political system might they try to develop (assuming the king agrees)? Tell why that system (or government) would be better than the current rule by a king.

They mght try to make a republic.
Because a king cant have his spot taken and you dont vote for king.
if the elected person gets mouthy the can fire him
republic people are involved

Sub-product Prompt and Response #2 (2/11/93)

What were the advantages and disadvantages of the system of feudalism? Who do you think has the most to gain from this system? Tell why.

Advantages	*Disadvantages*
food	*killed*
Houses	*No say so for serfs*
protection	*knights put Life on the Line*
say so except for serfs	*vassles no say so over knights*
Loyalty for king	

The knights because they fight and they live with nobles. so for fighting the king might pay them
They gain confidence from killing Vikings

Content Planning Worksheet

Date: 12/10/93

Teacher: Seventh Grade

Class: Social Studies

Textbook: The World Past and Present

Other Curriculum Materials: _____

Approximate Schedule of Content to be Delivered

Week	Dates		Textbook Unit	Textbook Chapters	Quiz Dates	Test Dates
1	From: 2/1	To: 2/5		6		
2	From: 2/8	To: 2/12				
3	From: 2/15	To: 2/19				
4	From: 2/22	To: 2/26				

KEY CONCEPTS

1. Middle Ages
2. Crusades
3. Knight
4. Castle Life
5. Feudalism
6. Chivalry
7. Charter
8. Trade
9. Plague
10. Architecture

IMPORTANT IDEAS

1. To gain power, people will attempt to control land, resources, and other people.
2. Groups of people form alliances for protection (same as Greece and Rome).

Figure 5. Content planning worksheet.

Concept	Attributes	Page	Examples/Non Examples	Page
1 Middle Ages	Period of history that lasted from AD 500 to 1500	R51	ex: began with the fall of Rome non ex: Sumerian Era	177
2 Crusades	Wars fought by christians during the M.A. to capture the Holy Land from Muslim Turks	R44	ex: children's crusade non ex: World War I	181
3 Knight	A trained, armored horseman who fought wars in the M.A.	R49	ex: soldier or armored horseman non ex: robber	187
4 Castle Life	A fortified group of buildings held by a vassal or a ruler in feudal societies		ex: large building non ex: cathedral	
5 Feudalism	The system of loyalties and protections in the M.A.	R46	ex: loyalty to the king non ex: caste system	183
6 Chivalry	The rules of behavior followed by the knights of the M.A.		ex: Emily Post's Book of Etiquette non ex: traitor	187
7 Charter	A document from a lord granting a town the right to self-government		ex: magna carta non ex: dictatorship	194
8 Trade	An exchange of goods/Buying and selling		ex: imports/exports non ex: embargo	
9 Plague	A widespread sickness that appeared in Europe in the 1340's	R54	ex: AIDS non ex: a cold	198
10 Architecture	A style or special way of building	R40	ex: castle/cathedral non ex: mountain	143

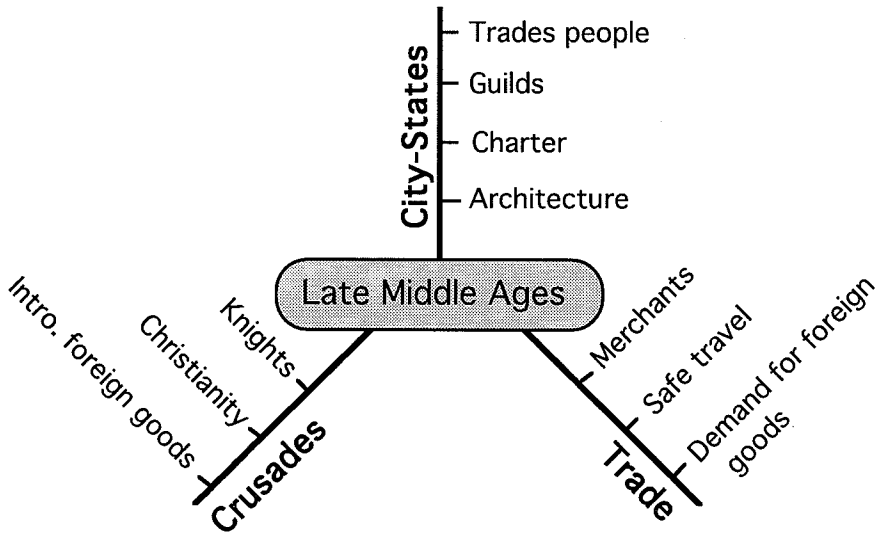


Figure 5. Content Planning Worksheet (continued).

However, in the following classwide essay, the student makes one choice, provides one reason, but then refutes his original choice by also supporting the non-choice. Tom's essay is the first reponse noted as 6018. The other essay responses are from several randomly selected students in Tom's class.

Classwide Prompt and Response (2/24/93)

The Knight and the Serf

This is a story about a small kingdom in Central Europe during the Middle Ages. The vassal who rules this small kingdom is Lord Martin. Lord Martin is a mean man. Everyone has to pay him very high taxes. All the serfs in the kingdom work very hard tending Lord Martin's crops, but Lord Martin doesn't take good care of them when they need help. He sends his knights off to fight battles, but he doesn't give them enough swords. Nobody likes Lord Martin the vassal.

Two people who live in the kingdom have decided they can't take it any more. One of these people is a knight named Sir John. The other person is a serf named Harold. Sir John and Harold have decided they do not want to be loyal to their vassal any longer. They will not pay Lord Martin anymore high taxes. Harold the serf will not work hard in the fields and Sir John the knight will not fight anymore battles.

Here are two things that could happen if Sir John and Harold stop being loyal to Lord Martin. Place an X beside the statement you think is most accurate.

____ Life will be easier for Sir John the knight than it will be for Harold the serf.

____ Life will be easier for Harold the serf than it will be for Sir John the knight.

Tell *why* you made your decision. Tell what information you used to make your decision. If you think things will be easier for the serf than for the knight, tell why. If you think things will be easier for the knight than for the serf, tell why.

4003

I think Life will be easier for Harold the John because the lord must have a lot of serfd and not notice one working. John is a night and MMartin probalyy doesn't have alot of knights and will notice one not working. So my conclusion is Harold will not be noticed working like, John will be noticedrealyquick.

4009

Things will be easier for Sir John the knight than it will be for Harold the serf. To explain this we have to go back a ways. Vassals started having rule over others when the vikings came. Viking's attcked villages without mercy. To remedy this problem, serfs were givin protection from the vassles in return for labor. Knights were recruited and swore allegiance to the vassles; they protected the comon people and fought in wars with the vikings.

The knights therefore knew how to handle battle. In this way, if Sir John were to go out alone, he would be safer than the serf. Serfs knew no warfare, and Harold would probably not know warfare since he was one.

4012

I think things would be easier for the knight instead of the serf because the knight is in a higher class than the serf. I made my decision because I think the serf won't be listened to because he is at the lowest point in society and the knight might be respected for helping win a battle saving the town or village from villains. The knight is helping the king with his services so I think the king will lower the taxes for knights and higher the taxes on serfs and take some of the money and buy the knights better weapons and armor.

4013

I think sir Johns life will be easier Because people respect him. And he has his own land. And Harold the serf is just training so the king could keep him as a serf and never let him become a knite and the king will fire him if he wouldn't serve the king any more. And sir John will have it easyier because theres not that many battle's he would have to fight but Harold the serf would have to keep serving the king every day.

4014

I think that life will be easier for Harold because he knows how to plant food so he can also take care of himself. He will have an easer life than Sir John will becasue John can't fight to take care of himself if he is weak. John needs food that he can't get.

4018

I think that life will be easier for sr. John, because he might have friends that will protect him if the Lord Martin trys to hrut him but the serf Harod will probably get punished or even kill because he dose not have any oher could probly stick up for him. I think that the punishmet for sef harold will probably be getting dunk into a pool of water with leaches. He will be dunck 100 time and then go with out food for a weeek, thethe people will finaly help him and lord martin will be lord nomore.

Sub-product Prompt and Response #3 (3/5/93)

The town of Gloom was not a peaceful place. The townspeople were beginning to move away. Merchants were fighting over the price of goods and the types of goods being made and sold. Nobles were making poor decisions for the townspeople that they didn't agree with. The lords were growing rich from taxes on the merchants' goods, but the merchants had to charge less for their goods to compete with prices on goods from other places. What do you think the townspeople and merchants should do to make their town a better place?

The people could write a charter that would give them the right to self gov. Then the people could make some decisions. they could make there own rules by forming a guild. Leave the town form own gov.

The subproduct essay above was generated with the intellectual operation reflecting prediction. The student has clearly drawn from his knowledge base of concepts and attributes to suggest likely solutions to the problem posed in the prompt. It appears that the student improves as he becomes more accustomed to responding to prompts and writing essays that focus only on thinking while ignoring basic skills deficits.

Classwide Prompt and Response (3/17/93)

Feudalism to Nation-States

Imagine you are a middle-class merchant in the late Middle Ages. You support the government of your nation-state because you need peace and a strong government so you and other merchants can safely carry on your business of buying and selling. You belong to a group or guild that represents other merchants and trades-people like tailors, potters, weavers and carpenters. You are very interested in protecting the rights of the townspeople where you do business.

Your nation-state has a strong government where the ruler has to share power with groups that represent the people. This is very different from the system of government of the early Middle Ages, which was known as Feudalism. You are explaining to your young apprentice how people lived and worked under the feudal system. He wants to know what happened to make things the way they are now in your town. Explain what you think happened to cause the growth of nation-states in the late Middle Ages.

6018

One thing that make up a nation state is a charter a charter was a document that makes it were you can help rule they made up the charter so they (people) would not get bossed around by the king because he was selfish

4003

The feudal system was about every one owning their loyaltie to the king. In return the king gave protection. The king would make up the rules. People began to get angry with the strong protecting the weak the feudal system. Some people decided not to abay by the laws. More and more people began to do nothing. The king said. Then when their was a lot of people began to do nothing the way they wanted. The king was not allowed to make decisions anymore. The people would vote on what to do and what not to do.

4009

Towards the end of the middle ages, the king was the sole ruler. Whatever he said was obeyed without complaint. Under the king, there were noblemen who gave their loyalty to the king. These noblemen were powerful and wealthy. Noblemen gave land and protection to lesser nobles, or vassals. People in the middle ages were afraid of vikings, bandits, and warriors. In return for protectin and land, vassals gave loyalty and military aid to the powerful nobles. Vassals usually occupied a manor house and lorded over serfs in a village. Sometimes vassals would build castles for protection when enemies came. Serfs labored for the vassals, or noblemen, and in return the vassals would give protection joined villages that did. The villages over time turned into town, and the towns into cities. This was the end of the middle ages.

4012
I think when there was a feudal sysrem there wasn't much opportunity for proplr to start there own businesses. So that's when I think guilds started forming in order for people to work independently. I also think that after the guilds were formed they grew into small towns to eliminate other competition but after more people started

4013
The fudle system involved a king noble vassle and sefrs. The noble gave protection to the weak in return for loyalty and labor. The fudel system stopped wene people wanted to be treated equal and not have to do any thng the king told them.

4014
The feudal system is the strong (rich) take care of the weak (poor). The protecteted them. For return the poor gave loyalty, labor and military service. people traveled in groups to trade outside of the manor because bandats and vikings worked out side the manor. People travaled in groups because the didn't want to get robed. They traved this way so that they could trade with other manors. When they we done trading there some people decided to stay in that villages of the manor. So those villages growed biger. Then grow bigger. Then the town was soon a city.

4015
Well you could say this is what happend there is a trangle at the top was the king. Phe king owed nothing he worigd about nothing. after the king was the no dels the nodals are reletives of the king they owe there lolelty to the king and control the vassels and serfs. Next is the vassels the vassels are the nights the nights owe there lolty to the nodals the vassels protect the serfs frome vikings and banders and worriors. the serfs are the slaves and twons people. thats the triangle of the fudal system the futal system is were the stroge protect the week the week are the people whith no money. and prety soon the vikings and people who stool from the villiges became more intrested in other things like travel so they dident have to worry about that much but thay still did some so the people started to travel in groups so they could trade and some people wanted to stay in the towens so they grow larger and turend to townes and then citiys.

4018
We went from a city or a fudlesystum were the king ruled everything to a self government because the people did not like listing to the king telling them what to do so the people got to gether and decided that everyone was equal and that they wanted to make their own government with their on rules that even the king would have to follow by. The people even started their own army that if a person did not have to be in it he would not have to he could do something else instead like make close, or pots. The people also decide the they could do what ever gob that they wanted to. I think that they also start a school show that more people could get a better ajication becides the church. Si that's why they made a governet.

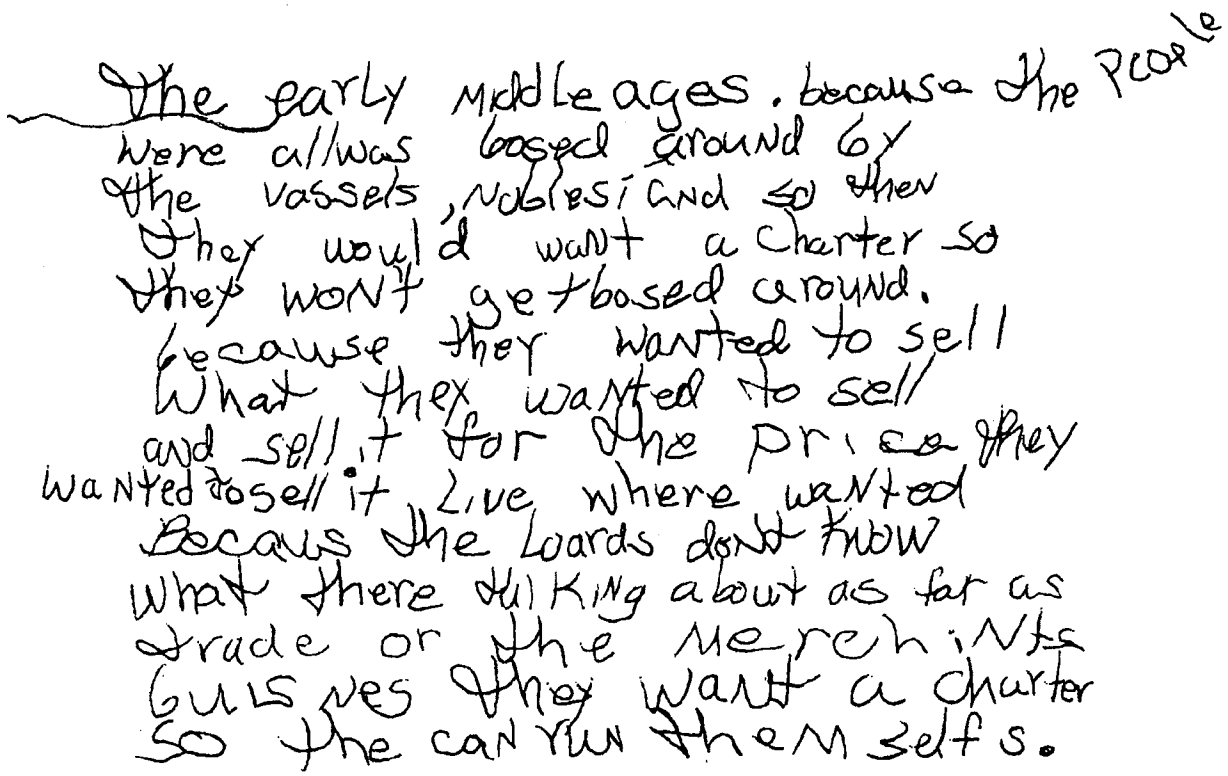
Tom's essay (6018) was generated with the intellectual operation reflecting application responding. Although the scoring criteria differs from that of evaluation and prediction and the student has not yet been taught any criteria, he has clearly listed one event (charter) that would bring about the outcome stated in the prompt and shows an understanding of an attribute of the concept. However there is not a specific link made between the event and the outcome, which would have resulted in a higher score.

The sub-product essay on the following page was generated for Tom and also as a parallel project to compare the progress of a special education student with that of a TAG student receiving a similar intervention. The results are interesting in that there is little difference in the two responses.

Sub-product Prompt and Responses #4 (3/16/93)

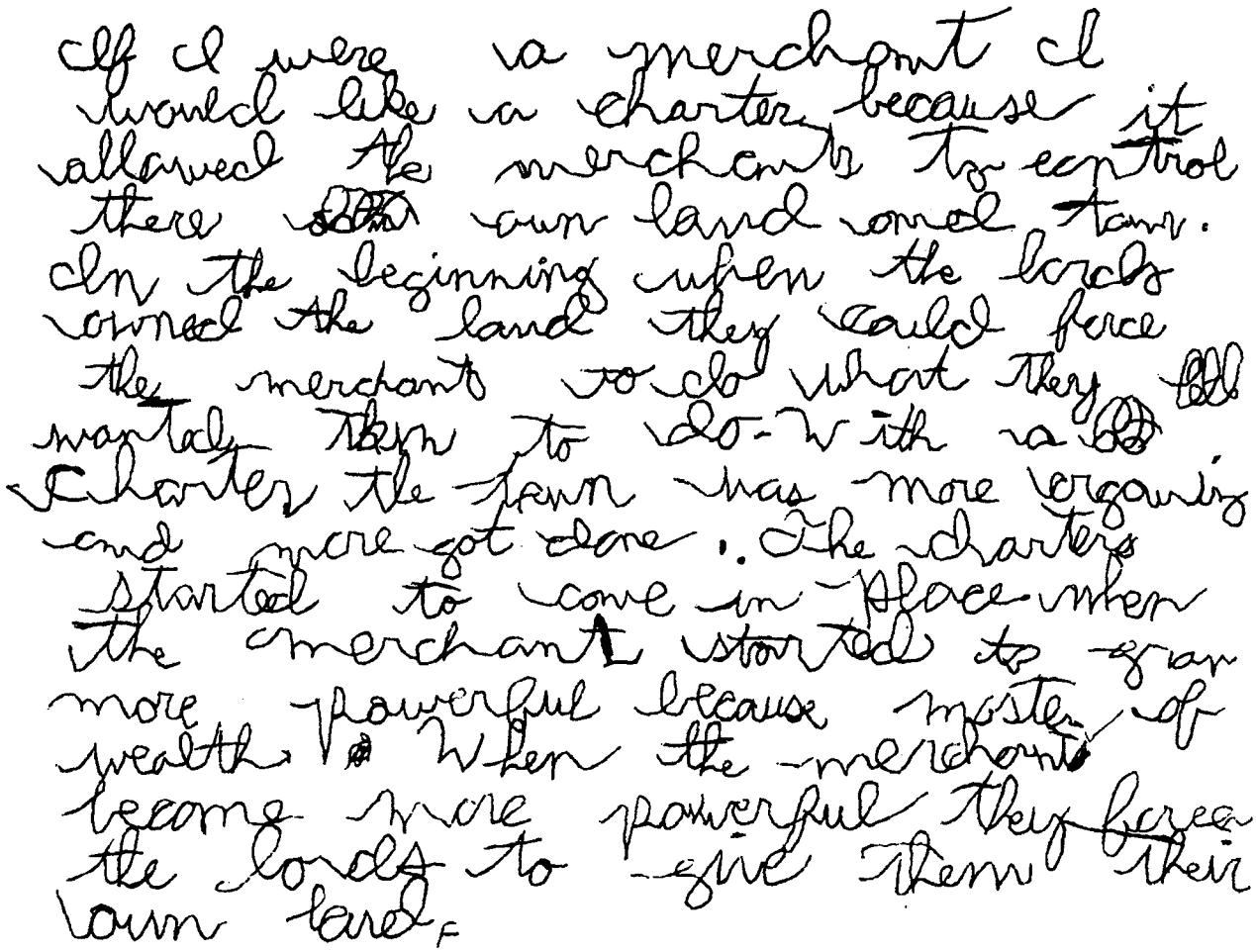
You are a merchant with a spice store in the township of Chestwick in the late Middle Ages. Many of the merchants in Chestwick have seen how well a charter has helped the people in the neighboring township and want to try this new system of self-governing. What happened to cause this movement toward writing charters in the late Middle Ages?

Tom



The early Middle ages. because the people were allwas bosed around by the vassels, nobles. And so then they would want a charter so they won't get bosed around. because they wanted to sell what they wanted to sell and sell it for the price they wanted to sell it, live where wanted. Becaus the loards don't know what there talking about as far as trade or the merchints buisnes they want a charter so the can run themselfs.

TAG Student



If I were a merchant I would like a charter because it allowed the merchants to control there own land and town. In the beginning when the lords owned the land they could force the merchants to do what they wanted them to do. With a charter the town was more organized and more got done. The charters started to come in place when the merchants started to grow more powerful because mastery of wealth. When the merchants became more powerful they forced the lords to give them their own land.

Both students have responded to this application essay with specific events that led to the outcome stated in the prompt. A link between the event and outcome is also stated in both essays. Both students were taught the same concepts and attributes and provided the opportunity to respond critically. It is obvious that there is little difference in the actual thinking skills of these two students, although their academic skills are vastly different.

The evaluation essay on the following page indicates little understanding for the knowledge forms taught (concepts or principles). However, a number of possible reasons are suggested: (a) The student was absent when his classmates were presented this essay, and he therefore had to make it up at another time with Doris present but not permitted to offer support, acording to administration procedures; (b) the student was moving to a new town and school the following day and was obviously distracted.

Tom had an opportunity to receive approximately two pull-away sessions each week in addition to three days in the content classroom. He was provided instruction on critical information paralleling that of the content teacher. Tom was taught the concepts using

Classwide Prompt and Response (3/19/93)

Conflict

Two kingdoms inhabit either side of a mountain range; both groups of people have abundant resources and practice their own religions. A conflict has arisen, and both kingdoms are talking about going to war against the other. Which of the following do you think is the reason for the conflict between these two groups of people? Tell why you made this choice and support it with what you know about different people throughout history.

____ Each group wanted to spread their own religious influence.
____ Each group wanted to control more land and resources.

4003

I think that they were fighting over control of the land because. They needed more power for defensive stuff. They wanted to beabley to fight against enimys. With more land the could fight off more enimies.

4009

Throughout history, people have wanted to spread their own religion. Take the Crusades for instance. People today are still fighting for the Middle East. Not only did the Crusaders speread their religion, but got land and resources. This might have been because when you are committed to religion, you want to give to the people that represent it. People also give money to religious representitives because you have a type of authority when you dominate people by religion. You can do just about anything in the name of the deity you are worshiping, and people usually do not go against it if they worship the same deity. Therefore, I think that the conflict betwwen the two kingdoms was on religious matters.

4013

I think the kingdoms are going to war because they want more land because with more land they could spread thier kingdom. Than they would have more power. They could go and take over other areas so they could expand more and have a realy powerful army and they would have lots of money with all the recourses.

4014

I think people wanted to control more land because of the resources that are on the land plus the fact there is more room for there people to live too.
If people want the land next to them they are going to try to take it.
Besides if the resources on there land has a lot of resources they can make money too. For one thing they don't have to buy as much from other countrieys, they can also raise the price of there resource to other countries.

4018

Each group wanted to control more land and Resourcees. So they went into a big fight over who gets what land. They fought for days, and days untill one day they got sick of fighting so they each sent one representive to talk to the other team about what they could do to bouth get more land and they sad that they could only have the land that they could befend. Both side whent some and decided thet thet was a good Idea so that is how they stoped fighting.

6018

I think the reason thay are thinking about going to war is because one culture on one side of the mountin range has got one Religion and the other has got there Religion and they think there Religion is much better because they go there (church) and there family went there.

direct instruction techniques with effective questioning that required him to use higher-order thinking skills. Initially, Tom's use of concepts and attributes was vague and his written reponses skeletal. However, his later essays, sub-product responses in particular, show significant growth in his ability to use concepts and attributes and to make more thoughtful responses. Despite the poor response on the final classwide essay and lack of growth on the classwides in general, it seemed important to continue this study with the second student to determine effects from this type of intervention. The results are described in Phase 2.

Phase 2 (Sarah)

The second phase involved the female student, Sarah. The social studies class was focused on writing a research paper and finishing up a schoolwide project fair during Sarah's intervention. Therefore, for the first two projects of the three specific units in the text were

replaced by a number of concepts and principles that had a recurring theme throughout the seventh grade social studies curriculum. These concepts/principles fell into three categories: (l) geography, (2) political systems, (3) economy. The last classwide essay focused on a unit within the text: China, Japan, & Korea.

The instructional format for Sarah was identical to that for Tom, with one exception: Doris taught the criteria for responding to the intellectual operation of evalution. However, the first project contained one subproduct that was designed to reflect prediction responding. Sarah was instructed to use any information she had learned about geography (the concepts and principles taught).

Sarah drew from her knowledge base of geographical concepts and principles to predict what conditions would be necessary to inhabit a new land. She has discussed the importance of water, climate, and natural resources in this essay and demonstrated the ability to manipulate that information in solving a problem.

The classwide essay below was designed to reflect evaluation responding and reflects Sarah's first attempt at evaluative thinking after being taught the criteria for judging the essays.

Sub-product Prompt and Sarah's Response #1 (4/8/93)

The planet you live on has become too populated and people are going without some very important things they need. The future of the planet does not look promising.

Imagine you have been selected to explore the nearest planets in your solar system. Your job is to find a new planet that your people can inhabit and settle. In your search, what kinds of things would you look for in a planet on which your people could live and prosper. Tell why you think so.

Some of the things I would look for would be water becuse you need water to live and I would look for good soil to grow crops and another thing you need water for is for irrigation to water your crops and the crops you need for food. And you would need a mild climate so you can grow crops and get more water. You would get lots of sunshine to grow crops and lots of water to fill the rivers and lakes. You want flat land to grow crops and trees to bild hoses.

Sarah made a clear choice, supported her choice, and provided reasoning for her non-choice. Although she scored high on the essay, the prompt is poor as it does not require the student to draw from an understanding of the concepts and principles taught.

Classwide Prompt and Response (4/26/93)

Natural Resources & Pollution

People have historically lived near water for all its lifesaving and life-improving qualities, yet we continue to pollute the water sources on this planet. People need clean air, yet our industries carelessly pollute this natural resource.

Think about how people affect their environment. Which of the following do you think should be done first to ensure the future of our planet? Place an X beside your choice:

_____ Enact laws which will stop all sources of water pollution.

_____ Enact laws which will stop all sources of air pollution.

Write an essay which tells why you made your decision. Tell what information you used, and how you chose between enacting water pollution laws or air pollution laws. If you would first enact laws to stop all sources of water pollution, explain why. If you would first enact laws to stop all sources of air pollution, explain why.

I think it sould be air becuse if we dont have air then we wont need water we will all be dead becuse you caint live whith out air exept for a minet or maby more. But you can survive whithout water for a cuple of days. I dident choose water becuse we dont need it as much as we need air. And we can store lots of water. their is also botteled wate in californa becuse the water is so bad. that is why I choose air over water.

The second 2-week project focused on the political systems of democracy, monarchy and dictatorship. The following essay was designed to reflect prediction responding.

The third project focused on traditional, market and command economic systems. The following subproduct was designed to reflect prediction responding.

Sub-product Prompt and Response #2 (4/20/93)

In a country with a monarchy, the king has been violently overthrown by a military leader. What type of political system would you expect will replace the monarchy? Why do you think so?

A Dictatorship will replace the monarchy becuse this person is using force to move in and it wont be a democracy becuse it wasent voted by the people. And force is not used in a democracy.

In this essay, Sarah has predicted an outcome and exibited knowledge of the concept of monarchy. She has also followed the criteria for evaluation responding in providing reasons why another outcome would not be logical.

Sarah was absent from school when the second classwide essay was given, therefore a comparison with her classmates is not possible for this specific essay.

Sarah predicted a course of action and described a likely outcome of that action that could benefit the economy, as prompted. The following classwide essay was designed to reflect evaluation responding.

Sarah made a choice in the next classwide essay on the following page and supported it with a rationale. However her argument against the non-choice is identical to her reasons for the choice. Also personal preference exceeds use of concepts taught.

Sub-product Prompt and Response #3 (5/4/93)

In a country with a traditional economy people do things in the same manner as their ancestors (farmers). If you could make one change in a traditional economy to benefit the people or economy of the country, what would you do. Tell why?

The government would go to other government to get money and then they would get lots of tools for all the farmers and the farmers wood get richer couse they would have a surplus of food so they could sell there extra food and the government would sell the food to other countrys and make the econamy even stroger.

Classwide Prompt and Response (6/3/93)

Yin and Yang

The countries of Yin and Yang both have a democratic political system where people help rule by voting on laws and electing representatives. However, Yin is socialist society while Yang is a capitalistic society.

Yin's socialist society is one where all the people share in the work and products made. Everyone lives comfortably, but no one individual has any great wealth. On the other hand, in Yang's capitalistic society, businesses are privately owned and operated for individual profit. Some people are very wealthy, but many are also poor; there are few in the middle class.

Both countries are developing and some citizens are satisfied, but there is a growing number of people in both countries who are dissatisfied and hope for changes in the economy.

Think about which aspects of socialism make it better or worse than capitalism. Then, decide which kind of country--with a socialist democracy or capitalistic democracy--you would choose to live in. Mark an X next to your choice below.

_____ Democracy with a capitalistic society

_____ Democracy with a socialist society

Now, explain your choice in the space below. If you choose a democracy with a capitalistic society, explain why. If you chose a democracy with a socialist society, explain why.

I chose a democracy with a capitalistic society becuse you should be able to choose your own bissness and get rich becuse if you are poor you prodadly got mixed up in drugs or somthing like that or evan got pragnet at an erly age and if you messed up your life than I think evry one else shouldent have to pay to. I dident choose soclism becuse you should be able to have your own bissness and get rich if you can and that is why I choose capitalism instead of socialism.

The last classwide essay was presented after the content teacher had taught the criteria for judging evaluation responding to the social studies class which included Sarah.

Classwide Prompt and Response (6/10/93)

Organize Hiro

The country of Hiro is a very old country that was once a prosperous empire ruled by a series of emperors. Over the years, the population has increased at an alarming rate and technology has developed. Many new political philosophies have emerged in hopes of forming a better government, but none have been fully successful in organizing Hiro society. With the possibility of over-population and new advances in technology, the people of Hiro need a political system that can better organize their society.

Two possible political systems have been suggested by Hiro advisors. One is a government where there is a group of elected representatives and goods are produced and distributed according to free enterprise. The other is a government where there is a small central committee of authorities who control the production and distribution of goods.

Place an X beside the political system you think is better for improving the organization of Hiro.

_____ group of elected representatives

_____ central committee of authorities

Use what you know about political systems. If you choose a group of elected representatives, tell why. If you choose central committee of authorities, tell why.

I think that they sould have a group of elected represenatives becuse people would be able to choose who they want to run there contry and they would be able to run there own bussneys and have the freedom of speech. but on the other hand people wouldent be adle to choose who they want for there contry and any one could Just take and evry one want to run the country so evry one would try to take over and that would cause a war. and that is a couple resons why I think that they sould have a group of elected representatives.

Sarah made a choice, provided a reason for the choice and one argument against the non-choice. She presented the criteria for evaluation responding, and could have received a perfect score if she had provided more than one reason for the choice or more than one argument against the non-choice. The results of these essays clearly demonstrate an ability to manipulate the critical information for a particular purpose.

Summary of Two Cases: Change Over Time

When these two cases are summarized with a graphic display that highlights their use of knowledge forms and their performance on the essays, we can see definite improvement over time.

In the following charts (Figure 6), Tom's performance over time is depicted. In the top graph, the number of thought units (one thought unit being a complete thought which can stand alone), concepts and attributes are counted for each of Tom's sub-product responses (T-Sub 1-4). The bottom graph indicates the total number of words written for each subproduct response.

Notice that the number of thought units increases as Tom gains experience in responding to essay prompts. Also, his use of concepts within essays increases. Where the first two essays contain only one concept, subsequent essays contain an increase of one concept. Also, where concept attributes are non-existent in the first essay, later essays contain more than one attribute. In the bottom graph, the number of words increases despite a decrease for the third essay response. Although Tom has used fewer words in this response, the essay contains the use of two concepts and two attributes and indicates a clear understanding of both. Many students' essays contain much superfluous information and indicate no truer understanding. Data for Tom indicates improvement in use of critical information for written responses.

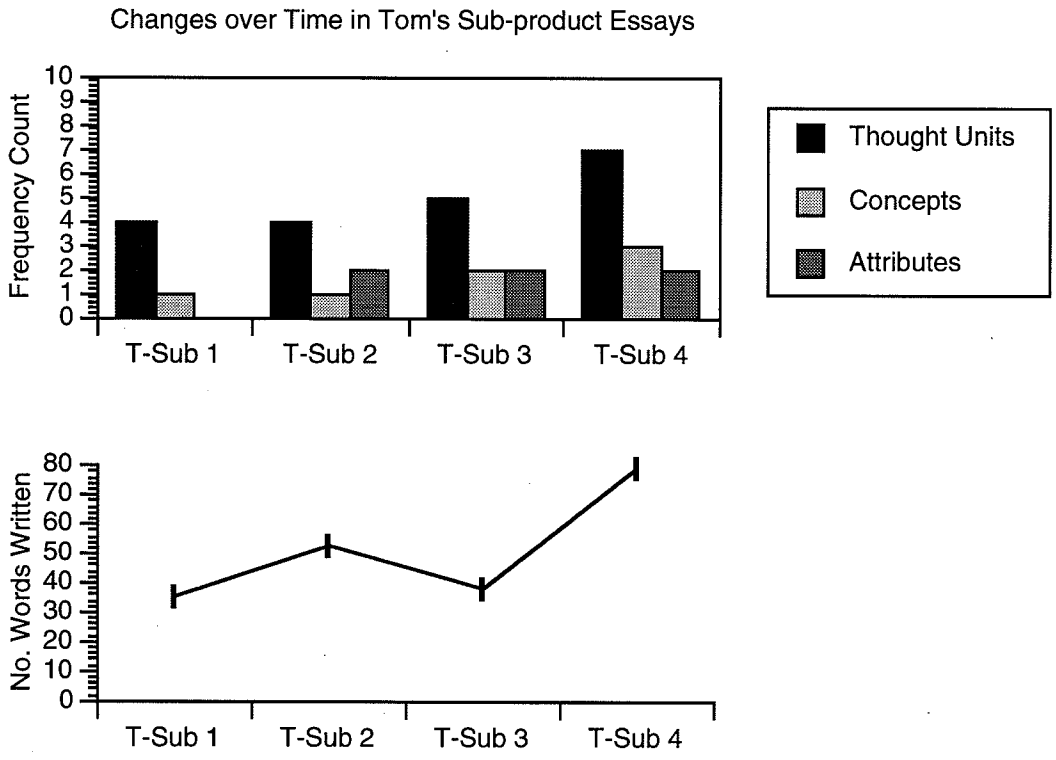


Figure 6. Changes in Tom's essay performance-production and concept measures.

Because Tom moved, making it no longer possible to track his performance, a new case was initiated. In this case, however, two comparable types of measures were used. As with Tom, the subproduct essay was administered during the instructional pull-away sessions. In Figure 7, similar data as appear in Figure 6 are plotted for Sarah.

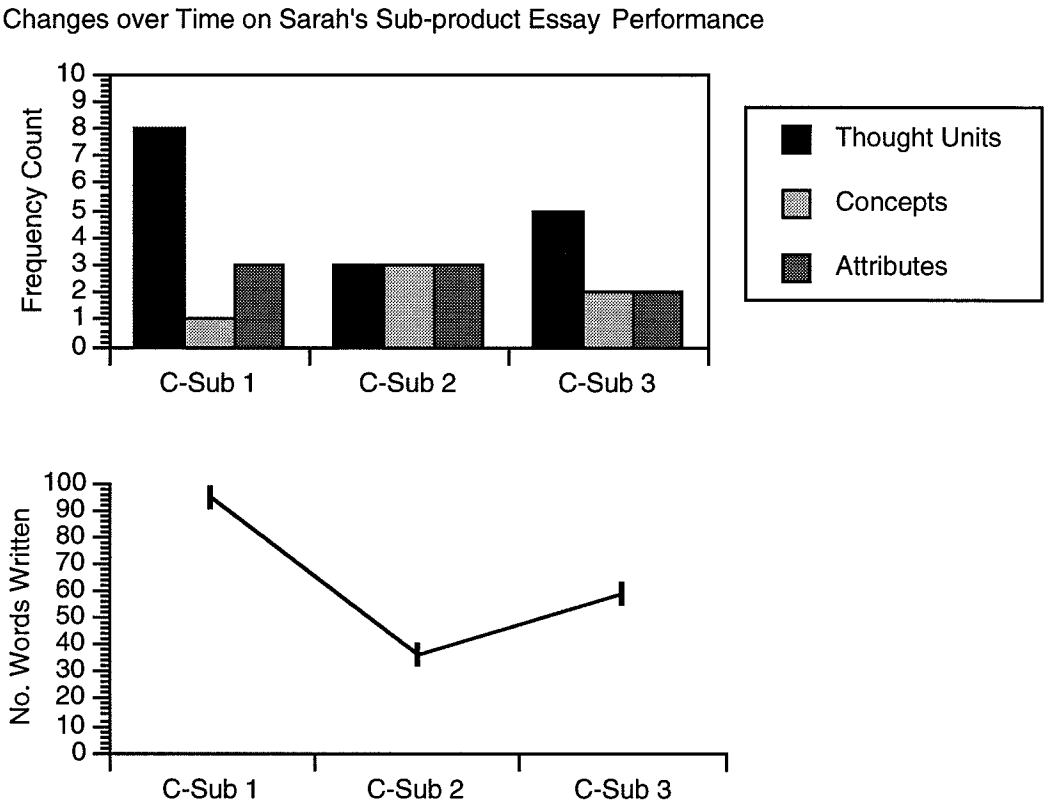


Figure 7. Changes in Sarah's sub-product essay performance: Production and concept measures.

To interpret the data for Sarah, the written responses themselves must be examined. Notice in both graphs the high frequency of thought units and words written for Sub-product 1, with a decrease for the remaining sub-product essays. It is apparent that Sarah's written response contains repetitive information indicating no clearer understanding than might have been demonstrated by a shorter response. After this sharp decrease, the thought units and number of words written both gradually increase again and contain more use of concepts and attributes, indicating a truer understanding.

The graphs in Figure 8 (on the following page) depict Sarah's changes over time on classwide essays. In the top graph, notice that the thought units in the first classwide essay are high, then decrease. Again, this essay contains repetitive thought units and non-relevant information. However, Sarah has increased overall in her use of concepts and attributes, as indicated by the difference between the first essay and later essays. In the bottom graph, as the number of words written increases, remember that the use of concepts and attributes also increases. Sarah's overall performance on classwide essays also shows improvement, as do the sub-product responses.

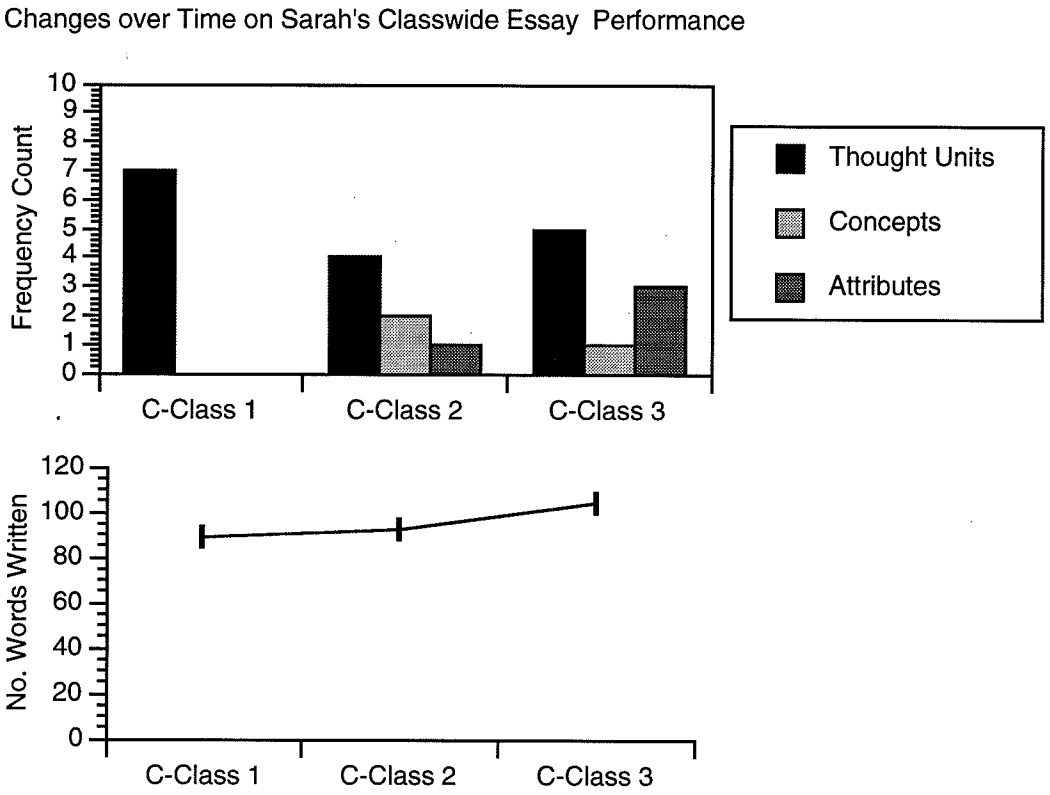


Figure 8. Changes in Sarah's subproduct essay performance: Production and concept measures.

In Figure 9, the data from classwide essays, which that everyone took at the same time, provide an opportunity to compare the performance of Tom and Sarah with others. In the first graph, performance was rated using the scoring sheets illustrated in Figure 2. Along with Tom (T-18) and Sarah (C-15), the performances of several other students in the class have been summarized. These students represent the range of ability levels in this class, with some average, and one in a program for Talented and Gifted students (J12). In the bar chart the actual ratings have been plotted for this group.

Notice that Tom and Sarah received ratings not unlike their classmates, as indicated by the comparability of the bar heights (across students). Although Tom's ratings appear lower as a whole, he has a rating on the first essay that is only one data point below four of his classmates, a rating on the second essay that is equal to four of his classmates (including the TAG student) and surpasses one other, and a rating on the third essay that is equal to one of his classmates. Also, notice that Sarah's ratings are higher than or comparable to all of her classmates.

These findings indicate that Tom and Sarah, at risk of failing their social studies class, performed comparably with their classmates in acquisition and use of content information. The reorganization of content curriculum and the collaborative efforts between teachers thus described have provided a structure capable of supporting special education students in the content classroom.

Discussion

This study examined a model of support for serving special education students in content classes. While most models focus on student deficits as the starting point of collaboration, an alternative model was presented that focuses on an analysis of the curriculum and instruction and its linkage to meaningful assessments of learning.

An important reaction to this study and intervention was noted in the transfer of positive behaviors to the content classroom. During collaborative meetings, the content teacher reported a vast improvement in Tom's classroom behavior, including an increase in positive interactions with peers and teacher. Tom initiated self-monitoring techniques for his own behavior, and the number of referrals for time-outs decreased considerably after initiation of this study. The content teacher also observed more cooperation from Tom in small-group work sessions within the classroom. He was observed helping his partner find some information in the text and expressing self-confidence in his acquired content knowledge. All these changes dem-

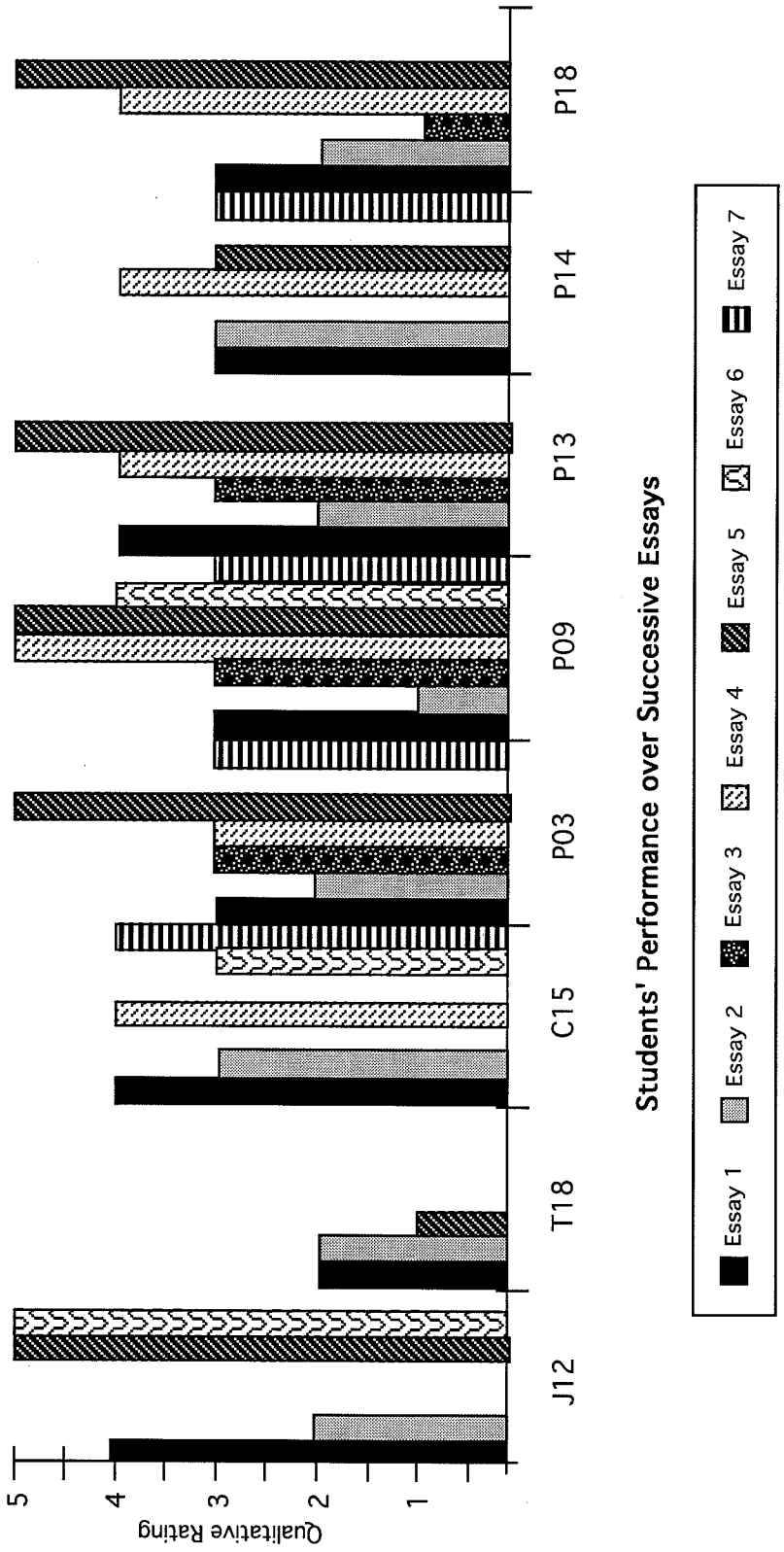


Figure 9. Normative standing in classwide essays for Tom (T18) and Sarah (C15).

onstrate a motivation to learn that surfaced through repeated opportunities for success on the knowledge forms, an opportunity to use newly acquired information in a relevant problem-solving context, and the focus of instruction on specific knowledge forms rather than on an overwhelming number of facts, typical of many social studies curriculums.

Although many consultant-centered interactive models are currently operating in schools, the collaborative model described here provides supplemental services that are responsive to the needs of individual students in the content areas. The instructional strategies have been developed to support special education students by promoting the thinking skills necessary to succeed in content classrooms to ensure a broader understanding of the content area.

Throughout this study a number of concerns surfaced with regard to the successful support of special education students in content classes. The first concern was that content teachers would not have time to complete the Content Planning Sheet or develop supplementary graphic organizers. The social studies teacher who participated in this study found the planning sheet to be a valuable tool for her own instruction in the classroom and a means for organizing her curriculum for the current and successive years. Once the critical concepts and principles are determined, the bulk of a teacher's planning is completed. S/he then has time to devote to developing supplementary tools, i.e. graphic organizers, and criterion-referenced evaluation measures.

The second concern was the prospect of writing the essay prompts. The social studies teacher found the assessment measures to be the most difficult and time-consuming aspect of the model. Although Doris was responsible for generating the essays for this study, a content teacher should have no trouble writing essays with a structured format to follow. With the collaborative effort of both teachers, essay prompts can be generated that are not content specific and used whenever the important concepts or principles are taught.

Regarding the use of prompts to measure instructional take, Doris discovered a shorter prompt was more effective with Tom. When using a longer prompt as a sub-product measure, Doris found Tom's frustration level increased. She was forced to read one portion of the prompt and ensure understanding before continuing with the rest. Tom appeared overwhelmed when required to read more than a short paragraph of information. Poor reading skills and longer prompts could have been the reason Tom performed less than adequately on the classwide essays.

The third concern was how to schedule support for several students from more than one content classroom. Although this study provided supplementary services for one student in one classroom, it is conceivable that a number of students from one content area could be pulled away from the classroom during non-critical class times and provided this support by a special education teacher. Also, with the content teacher providing instruction on the most important information within a unit, focusing on concepts and principles rather than the excessive amount of facts in a text, special education students can more readily meet the demands of the content classroom.

The purpose of this study was to field test and describe a collaborative model using classroom-based assessments that provide information about student performance on content knowledge from the curriculum (Tindal & Marston, 1990). The essay measures and final projects were developed and administered to students after teaching specific knowledge forms; thus they linked instruction with assessment, allowing an individual to closely monitor student progress toward goals. The essay tests required the case students and their classmates to use the content information recently acquired in a variety of intellectual operations. Students' responses were scored according to the presence of certain components of the intellectual operation and correct use of content information.

With collaboration that focuses on instruction and learning assessment rather than student behavior, content and special education teachers can provide instruction that uses information specific to content understanding without the added burden of inordinate amounts of factual information. Special education students can acquire content information when it is organized around critical knowledge forms despite their basic skills deficits. Students at risk of failure do not require more of the same curriculum and instruction. Rather, they need to have the most critical information presented in a structure that is clear and easy to understand and then have an opportunity to use that information for some purpose. The content teacher is instrumental in providing important information that lends itself to more systematic instruction. Through collaborative restructuring and supplementing of the secondary content classroom, the needs of special education students can be met effectively and meaningful use of information can occur. With this model, special and regular educators working together have an extraordinary opportunity to create an educational structure that provides every child with the opportunity to succeed in school.

References

Anderson-Inman, L. (1987). Consistency of performance across classrooms: Instructional materials versus setting as influencing variables. *Journal of Special Education, 21,* 9-29.

Baker, J. M., & Zigmond, N. (1990). Are regular education classes equipped to accommodate students with learning disabilities? *Exceptional Children, 56*(6), 515-526.

Carnine, D. (1991). Curricular interventions for teaching higher order thinking to all students: Introduction to the special series. *Journal of Learning Disabilities, 24*(5), 261-269.

Carnine, D., & Sibert, J. (1979). Direct instruction reading. Columbus, OH: Merrill.

Cole, N. C. (1990). Conceptions of educational achievement. *Educational Researcher,* (April) 2-6.

Conoley, J. C., & Conoley, C. W. (1982). The effects of two conditions on student-teacher problem descriptions and remedial plans. *Journal of School Psychology, 20,* 325-328.

Curtis, M. J., & Meyers, J. (1988). Consultation: A foundation for alternative services in the schools. In Graden, Zins & Curtis (Eds.), *Alternative Educational Delivery Systems: Enhancing instructional options for all students.* Washington D.C.: National Association of School Psychologists.

Deshler, D., Lowrey, N., & Alley, G. (1979). Programming alternatives for LD adolescents: A national survey. *Academic Therapy, 14,* 389-397.

Deshler, D. D., & Schumaker, J. B. (1988). An instructional model for teaching students how to learn. In Graden, Zins & Curtis (Eds.), *Alternative educational delivery systems: Enhancing Instructional options for all students.* Washington D.C.: National Association of School Psychologists.

Deshler, D. D., Schumaker, J. B., Lenz, B. K., & Ellis, E. S. (1984). Academic and cognitive interventions for LD adolescents: Part II. *Journal of Learning Disabilities, 17*(3), 170-187.

Ellett, L. (1993). Instructional practices in mainstreamed secondary classrooms. *Journal of Learning Disabilities, 26*(1), 57-62.

Ellis, E. S., & Lenz, B. K. (1990). Techniques for mediating content-area learning: Issues and research. *Focus on Exceptional Children, 22*(9), 1.

Ellis, E. S., Deshler, D. D., Lenz, B. K., Schumaker, J. B., & Clark, F. L. (1991). An instructional model for teaching learning strategies. *Focus on Exceptional Children, 23*(6), 4-5.

Ellis, E. S., Lenz, B. K., & Sabornie, E. J. (1987). Generalization and adaptation of learning strategies to natural environments. Part I: Critical agents. *Remedial and Special Education, 8*(1), 6-20.

Graden, J. S., Zins, J. E., Curtis, M. J., & Cobb, C. T. (1988). The need for alternatives in education services. In Graden, Zins & Curtis (Eds.), *Alternative Educational Delivery Systems: Enhancing instructional options for all students.* Washington D.C.: National Association of School Psychologists.

Idol, L. (1989). The resource/consulting teacher: An integrated model of service delivery. *Remedial and Special Education, 10*(6), 38-48.

Jason, L. A., Ferone, L., & Anderegg, T. (1979). Evaluating ecological, behavioral and process consultation interventions. *Journal of School Psychology, 17,* 103-116.

Kearney, C. A., & Durand, V. M. (1992). How prepared are our teachers for mainstreamed classroom settings: A survey of postsecondary schools of education in New York State. *Exceptional Children, 59*(1), 6-11.

Mastropieri, M. A., Scruggs, T. E., McLoone, B., & Levin, J. R. (1985). Facilitating learning disabled students' acquisition of science classifications. *Learning disabilities Quarterly, 8,* 299-309.

McKenzie, R. G. (1991). Content area instruction delivered by secondary learning disabilities teachers: A national survey. *Learning Disabilities Quarterly, 14,* 115-122.

Mosby, R. (1980). The application of the development-by-pass procedure to LD adolescents. *Journal of Learning Disabilities, 13,* 21-22.

Nagel, D. R., Schumaker, J. B., & Deshler, D. D. (1986). *The learning strategies curriculum: The FIRST-letter mnemonic strategy.* Lawrence, KS: Edge Enterprises.

Nolet, V., & Tindal, G. (1993). Special education in content area classes: Development of a model and practical procedures. *Remedial and Special Education, 14*(1), 36-48.

Nolet, V., & Tindal, G. (1993). Variables associated with student performance in content classes: Description of a research methodology. *Paper presented at the Pacific Coast Research Conference,* Redondo Beach, CA.

Patton, J. R., Polloway, E. A., & Cronin, M. E. (1987). Social studies instruction for handicapped students: A review of current practices. *The Social Studies,* (May/June) 131-135.

Polloway, E. A., Patton, J. R., Epstein, M. H., & Smith, E. C. (1989). Comprehensive curriculum for students with mild handicaps. *Focus on Exceptional Children, 21*(8), 5.

Reynolds, M. C., Wang, M. C., & Walberg, H. J. (1987). The necessary restructuring of specials and regular education. *Exceptional Children, 53*(5), 391-398.

Tindal , G., & Marston, D. (1990). Classroom-based assessment: Evaluating instructional programs. Columbus, OH: Charles Merrill.

Tindal, G., Nolet, V. W., & Blake, G. (1992). Focus on Teaching and Learning in Content Classes. *Training module no.3.* Eugene, OR: Research, Consultation, and Training Program University of Oregon.

Will, M. C. (1986). Educating children with learning problems: A shared responsibility. *Exceptional Children, 52*(5), 411-416.

Will, M. (1986). Educating students with learning problems - a shared responsibility. *A Report To the Secretary,* OSERS, Washington, D.C.

Zigmond, N. (1990). Rethinking secondary school programs for students with learning disabilities. *Focus on Exceptional Children, 2*(1), 1-22.

Zigmond, N., Levin, E., & Laurie, T. E. (1985). Managing the mainstream: An analysis of teacher attitudes and student performance in mainstream high school programs. *Journal of Learning Disabilities, 18*(9), 535-541.

Zigmond, N., Sansone, J. M., S. E., Donahoe, K. A., & Kohnke, R. (1986). Teaching learning disabled students at the secondary school level. The Council for Exceptional Children, Reston, VA.