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ABSTRACT

One way of helping learners to develop knowledge, skills, and predispositions essential for independent learning is by teaching reading in content areas to help learners acquire the necessary strategies to use reading and writing to gain new knowledge. Conent area texts pose differing demands because each body of knowledge has its own framework which requires different interpretive strategies. The teacher's job is to ensure that the learners can develop in themselves the knowledge, skills, and predisposition to interact with text at a higher level of understanding through judicious use of reading and learning strategies. The teacher should make sure that the learning process occurs in the way relevant to learners' inclination and preference. Teachers' instructional supports in the forms of the activation and fine-tuning of prior knowledge before reading, provision of guiding questions to help readers get focused during the act of reading, and postreading activities to synthesize and consolidate what has been encountered in the text should facilitate learners' learning from content area texts. (Contains 30 references.) (RS)

CONTENT AREA READING: PRINCIPLES AND STRATEGIES TO PROMOTE INDEPENDENT LEARNING

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Science and technology, and other areas of knowledge alike, have been developing in a very rapid way. This continuing explosion of knowledge poses increasingly higher literacy demands to formal education, whose primary job is to prepare learners for productive citizenship.

Since the formal education cannot be expected to provide individuals with sufficient knowledge to last a lifetime (Herber, 1970), educators have now turned their attention to alternative efforts to help learners to develop knowledge, skills, and predispositions essential for independent learning. One way of promoting this development is through teaching of reading in content areas with the primary purpose of helping learners acquire the necessary strategies to use reading (and writing) for the acquisition of new knowledge from the materials required in their subjects. In the words of McKenna & Robinson (1990, 1993), the purpose of the content area reading is the development of "content literacy."

This paper will (1) unpack the notion of content literacy and what the content-area reading entails, (2) elaborate on the principles derived from relevant research on reading and writing on which the notion of content literacy is based, and (3) propose instructional strategies.

CONTENT LITERACY: DEFINITION, REQUIREMENTS

McKenna & Robinson (1990, 1993) define content literacy as the ability to use reading and writing for the acquisition of new content in a given discipline. Such an ability includes general literacy skills (e.g., understanding what a text means, locating central ideas in the text, etc.), content-specific literacy skills (e.g., reading conventionalized symbols in math; map reading in the social studies, etc.), and prior knowledge of content of the subject matter. General reading skills allow comprehension across different subject matters, specific content knowledge allows the construction of a deeper level of understanding within a subject matter, and background knowledge enables learners to relate what is read to what they already know (Perfetti, 1991).

As mentioned earlier, the notion of content literacy suggests that learners' understanding of the content presented in all subjects could be substantially enhanced through appropriate writing assignments and supplemental reading (McKenna & Robinson, 1990, 1993). This will happen only after the learners can understand the informational content of what they read. In other words, to use Adler & Van Doren's (1972) hierarchy of reading abilities, the

learners must first be able to comprehend what the text says ("elementary reading") before they can process the information at the higher levels ("inspectional," "analytical," and "syntopical" reading), such as those required in the notion of using writing and supplemental reading as a learning tool.

While, at face value, critical reading in content area seems to focus on what readers do to the text, it does not mean that the texts themselves are not important. The texts are important because they play a role as the "interface" between specific knowledge and general comprehension ability, and they also pose some demand to the learners. Muth (1987) has observed that content area texts-- which are expository, as opposed to narrative, in form-- are characterized by such features as heavy concept load, technical vocabulary, hierarchical patterns of main ideas and details, and unfamiliar content.

To assist learners in comprehending this kind of "subject matter genre" (Perfetti, 1991), content area reading must be taught functionally in that both the skills and processes needed to learn from text are integrated with the learning of content (Bean & Readance, 1989).

WHAT CONTENT AREA READING REQUIRES OF LEARNERS

According to Perfetti (1991), subject matter genre reflects a mix of underlying conceptual factors and the sorts of text forms that those conceptual structures readily allow. This means that subject matter genre, which contains both form and content, poses to

its readers demands which are different from a different genre, such as narrative, with which elementary grade children are familiar.

More specifically, Catterson (1990) has identified three major types of school texts with their unique conceptual and textual structures, which require different approaches from readers' part: information-focused, concept-focused, and process-focused texts. Commonly found in Social Studies text, information-focused prose generally presents information organized in logical subcategories and uses the rhetorical patterns of cause/effect, list/enumeration, comparison/contrast. Graphics, when available, are generally used to emphasize ideas which are already stated verbally.

In contrast, concept-focused prose, which is commonly used in Science text, presents the topics within a book chapter in the order from simpler to more complex concepts; and the description of experiment and explanation of scientific processes are presented subsequently to foster scientific thinking.

Different from those two rhetorical types mentioned earlier, process-focused prose, which is generally found in mathematics texts, targets its informational content at the development of problem-solving processes in the readers. Responding to this rhetorical constraint, the author of math text typically "moves" in the following direction: explaining concept, providing sample problems with step by step solutions, and then providing a number of problems for the readers so that they can test their problem solving.

In addition to those different textual and rhetorical

features, some other demands are also present: those related with specialized vocabulary and discipline-specific concept (Bean & Readance, 1989).

In sum, content area texts pose differing demands because each body of knowledge has its own framework, consisting of facts, concepts, generalizations, and scriptal knowledge (Singer & Simonsen, 1989) and they therefore require on the part of learners different interpretive strategies, such as setting specific purposes before reading, anticipating what the text says and how it presents the information on the basis of the learners' knowledge of text types and their purposes, and evaluating the relative value of the information presented in the text.

WHAT CONTENT AREA READING REQUIRES OF TEACHERS

Content area reading assumes that all students should be able to learn from a variety of texts in and outside of school. This assumption carries with it some instructional challenges for the teacher to take-- challenges stemming from the content, the text, and the students (Santa, Havens, & Harrison, 1989)

The content of instruction poses a considerable challenge because of its vast coverage, especially in the instructional context where most students do not have the background knowledge to comprehend much of the information presented. The challenge from the text stems from the fact that many content area texts are not written very clearly (Schallert & Roser, 1989). Consequently, the teacher needs to serve as an "editor" and understand the way a

particular author presents information. Once the delivery style is clear to the teacher, the knowledge must be "passed on" to the learners, who will later learn for themselves as to how to identify what kind of textual structure the writer uses and how she lays out the information for the text they are reading.

The last important challenge is the learner. According to Santa and others (1989), few students know how to organize information for learning; few students know how to study and learn from text even though they have no significant problem with reading what the text says. Consider an example. The first-to-third-grade elementary school children are well acknowledged to have successfully learned to read through basal readers which are mostly narrative in genre. However, the young children's transition from learning-to-read to reading-to-learn in non-narrative genre is less than smooth (Kamil, 1994) because content-area texts, which are "officially" introduced to the children from fourth grade onward, present inherently different text organization, heavier (specialized) vocabulary and concept loads (Bean & Readance, 1989).

The less-than-successful transition from learning to read through narrative to reading to learn in expository genre indicates that the ability to learn from text is not a direct extension of the ability to do elementary reading (Adler & Van Doren, 1972). In other words, it is the job of the teacher to help develop in learners a variety of strategies that are instrumental in learning and studying from text materials, if they are expected to become independent learners who can continue learning beyond the confines of the

classroom.

More specifically, in instructional terms, the learning strategies which the teacher must teach to young children can be divided into three different, but mutually supportive, categories: content-related knowledge and/or skills, general reading skills, and critical reading skills. The job of the teacher here is to ensure that the learners can develop in themselves the knowledge, skills, and predisposition to interact with text at higher level of understanding through a judicious use of reading and learning strategies.

CONTENT AREA READING: PRINCIPLES AND STRATEGIES

As outlined earlier, content area reading is a learner-centered strategic intervention to help learners to develop into independent readers who can strategically use writing and supplemental reading and other learning techniques to acquire new knowledge in the content subjects they study. Some principles and strategies can be derived from what has been known relative to the nature of comprehension of "subject matter genre" (Perfetti, 1991), the general patterns of textual organization of the content area text, the nature of background knowledge, and cognitive processes involved in reading to learn from content-specific expository prose.

Some Principles for Strategic Intervention

First of all, it should always be remembered that instruction

should begin and end with learners. This means that the teacher's understanding of the learners should form the basis of all instructional activities. For instance, before beginning any new lesson, the teacher needs to make sure that learners have appropriate background knowledge as a basis for processing new information because school learning can be easy or difficult for learners depending on the degree of fit between the new lesson with what the learners already know beforehand (Marshall, 1989).

Second, teacher's intervention should be "empowering" in that the result of instruction should make the learners more independent in dealing with similar textual demands both in content-related reading across subject matters as well as in similar situations outside the classroom. This means that the teacher should continually remind herself of the "locus of control" in order to gradually release the learning responsibility to learners.

Related to the notion of gradual release of control is the development of viable learning strategies. The teacher needs to introduce to the learners a variety of strategies to learn from various content area texts. This means that the teacher should use multiple texts, and demonstrate to the learners how to approach different texts using different techniques before, during and after the reading act, and provide the learners with concrete, direct and/or vicarious experiences in doing the same. In this way, the learners have the opportunity to see and learn for themselves how some strategies can enhance their comprehension of content area text and how to effectively learn from the text (Ogle, 1989). The same

process will also help develop in the learners metacognitive awareness-- awareness about and sense of control over their own thinking processes.

The notion of "gradual release of responsibility" suggests the importance of personal ownership and autonomy in that, eventually, the learners should see for themselves that what they learn in content area reading can be a personal "asset" which is useful for their lives outside the school. This realization is vital to ensure transfer of schooled literacy skills to real-life literacy demands (Mikulecky, 1989). To ensure this, the teacher can design her instructional activities in such a way that the learners always do realistic things with what they have learned from reading content area text.

For content area learning to happen, reading activities should have reasonably valuable purposes external to themselves, so that learners see personal relevance in what they are doing. This means that, together with learners, the teacher should make explicit the purposes for all reading (and reading-related) activities conducted in the class.

Content area reading should be geared to critical reading. As such it should get learners involved in doing various things through reading at all levels: from inspectional, analytic to syntopical reading as they are appropriate to a particular reading unit (Adler & Van Doren, 1972). It means that the teacher should attempt, to the extent possible, to encourage learners to critically process what they read by guiding them using well-designed questions relevant for

prereading, and during- and- after reading activities.

Effective reading strategies do not just happen; they develop through conscious deliberation and practice. The teacher can help learners develop reading strategies by a modeling, "cognitive coaching" process, in which she demonstrates processing the information by thinking aloud. By doing this, the teacher provides a direct, concrete model both in the forms of tangible behavior and thinking processes for the learners to see and follow. The "coaching" should be done in a way consistent with the principle of "gradual release of responsibility" : demonstration by the teacher followed with direct, guided engagement by learners and teacher, and then independent practice by learners to be followed with evaluation and reflections by both learners and the teacher.

The notion of learner-centered instruction implies the centrality of learners' success in their learning. The teacher should make sure that the learning process does occur in the way relevant to learners' inclination and preference. Too in the way the teacher assess the process and evaluate the result of students' learning she should position herself as a facilitator at the service of students' optimal learning. Because, it is only when the learners are personally involved can they learn the lessons with the greatest facility.

Some Instructional Strategies

The purpose of this subsection is to further elaborate on the "principles" outlined above to the practical level-- to talk about

the hows of the strategic intervention. More specifically, the strategies will be related to prior knowledge, learning strategies, transfer of responsibility and literacy skills, developing purposes for reading, and questioning.

Prior Knowledge

Ample research supports the notion that learning is an interaction between a learner and information (e.g., Marshall, 1989; McKenna & Robinson, 1993). Since all new learning is based on existing knowledge, the previous experiences of the learners are central to instruction. Given this central nature of prior knowledge-- which includes knowledge about content-specific vocabulary, the structures of text and the nature of ideas or concepts about which they are learning-- the teacher should assess learners' background knowledge before beginning a new lesson. Some techniques seem to work well to serve the purpose: using direct questions; PReP (Prereading Plan), and KWL (inquiries about what learners already know, what they want to learn, and what they learned) (Kamil, 1994). Or, proactively the teacher can also use the following questions as a guide for planning content area lesson (Marshall, 1989, p. 63):

> (1) What do the students need to know before they can learn this topic? (Develop a test of the needed prior knowledge. If it exists, the lesson can extend from there. If it is incomplete or nonexistent, the lesson must begin with instruction about the missing elements of prior knowledge.)
>
> (2) How is organization organized? can I make a diagram of the way the pieces of information fit together? (You should be able to. Such diagrams should be presented to the class before new learning to help the holistic learners and again after new

learning to help sequential learners.)

(3) What are the connections between existing knowledge and new information? (Specify these and then help the students make these connections by using concrete examples and by using the diagram as models of how old and new information fit together.)

Once the teacher knows the reading strengths and weaknesses of the learners, teaching must proceed accordingly.

Developing a Repertoire of Learning Strategies

As suggested in foregoing paragraphs, in order to become independent readers, learners need to develop both various ways of learning new content and awareness of their own learning and achievement of their learning objectives. The teacher can play a role on this. For instance, to help learners monitor their learning, the teacher can work with learners in three areas of monitoring: awareness of knowledge, awareness of task demands, and awareness of appropriate learning strategies.

Awareness of one's own knowledge is important because it enables one to raise into consciousness what one does not know, what one wants to know, and how one is to go about finding the needed information. To help learners work on this, the teacher can work with learners using a K-W-L worksheet, consisting of three columns: What I Know, What I Want to Learn, and What I Learned.

Awareness of task demands enables one to work efficiently. A part of requirements for being a strategic reader, therefore, is having awareness of task demands. To help learners realize the utility value of the awareness of task demands, the teacher can use

an analogy of planning a trip: when we have a sense of where we are going, we can plan our course of action (or determine how to reach the destination).

Another important awareness is the awareness of appropriate learning strategies, which is basically knowing what to do and when to do in a learning situation. The teacher can help learners to get more "planful" in their learning by, among other things, giving demonstrations. For instance, using thinking aloud as a technique for demonstration, the teacher can share a model of how she (actually) plans her lesson and/or learning in her own real life.

In doing all of this, the teacher should continually remind herself that the objective is for the learners to learn to use strategies for themselves so that they can become self-directed learners. Therefore the teacher should help the learners move toward independence.

Transfer of Responsibility and Literacy Skills

Actually the "transfer of responsibility" and the "transfer of literacy skills" represent two different notions. For practical reasons, however, they are presently treated under one single heading.

As elaborated earlier, the teacher's instructional efforts should be geared toward learners' independence. To facilitate "transfer of learning responsibility" from the teacher to learners, instruction should be deliberately designed toward this direction. For instance, when helping learners to learn how to transform an

organizational pattern of a paragraph into a diagram, the teacher can first of all demonstrate to the learners how she does the complete set of transformation. Another time, the teacher might start the same process and then get the learners involved in (partially) completing the diagram. Upon giving repeated partial support in completing similar diagrams, the teacher can then ask the learners to do the transformation from scratch without the teacher's assistance. The process is then reviewed together to encourage reflection and reinforce what has been learned.

In this way, the learners can gradually master the "operation" and internalize it for their own independent use--hence "transfer of learning responsibility."

The notion of transfer of responsibility is in some way related with the notion of transfer of schooled literacy skills to real life literacy demands (Mikulecky, 1989) in that both require "utility value" for their occurrence. As learning will not happen unless learners see meaningful reasons for doing it, schooled literacy skills will not automatically transfer to real life demands unless the former has utility value to transfer in the latter context. In other words, in order to facilitate transfer of literacy skills to real life literacy events, the teacher can design her literacy instruction in such a way that the learners can see the utility value of what they are required to learn relative to their both current and future needs outside the classroom. The connections can generally be made by relating what they learn in school to what is required of them in their lives outside the school.

Developing Purposes for Reading

Essential for active comprehension is purposes for reading because it is the reading purpose that activates relevant background knowledge (McKenna & Robinson, 1993); and background knowledge, in turn, helps create reasons for learning (Marshall, 1989). The availability of clear purpose for reading is vital for learning to happen because, depending on the reading purpose, learners' attention is directed differently. Given this generalization, the teacher needs to make sure that learners have clear purposes for reading before getting them involved in reading activities. One way of doing it is to work with learners on formulating meaningful reading purposes before beginning to do the reading and then write them down on the board for the learners to use as a guide. In this way, the reading process is more focused.

Guiding by Questioning and Assigning

Content area reading occurs within the context of instruction. As such, the teacher has a great deal of opportunity to help students learn from content area texts. One common form of instructional assistance-- which basically covers all strategic interventions outlined earlier-- is guiding through questions and assignments, which can be attached to three different phases of reading activity: before reading, during the reading act, and after reading act (Anders & Lloyd, 1989).

Before-Reading Activities

Langer's (1981) PReReading Plan (PReP) seems to be of particular use in this case as the activity provides some measure of learners' prior knowledge on any given topic (McKenna & Robisnon, 1993; Anders & Lloyd, 1989). Another useful prereading activity is the use of semantic feature analysis, where learners are introduced to the concepts to be read in the text, and learners' background knowledge get activated.

During-Reading Activities

The teacher can guide learners' reading process by providing them with some questions that can help learners monitor their comprehension. The questions can take several forms: content questions, process questions, organizational guides (Anthony & Raphael, 1989). Constructed from the knowledge of how good comprehenders process informational text, during-reading questioning should help promote learners' understanding of content, as well as the processes of reading that lead to comprehension.

After-Reading Activities

In content area reading, besides comprehension, retention is important. After-reading activities should provide learners with additional opportunities to rehearse and consolidate what has been learned from the text. The teacher can help learners consolidate and synthesize what they have learned by getting the learners to engage in a number of postreading activities: reviewing information,

applying information (Anthony & Raphael, 1989) and summary writing (McKenna & Robinson, 1993).

In summary, teachers' instructional supports in the forms of the activation and fine-tuning of background knowledge before reading, provision of guiding questions to help readers get focused during the reading act, and postreading activities to synthesize and consolidate what has been encountered in the text should facilitate learners' learning from content area texts.

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