DOCUMENT RESUME

ED 141 747 CS 003 425

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TITLE Inservice Diffusion of Reading Into Technical Areas.
PUB DATE Feb 77
NOTE 11p.; Paper presented at the Annual Meeting of the Midwest Regional Conference on English in the Two-Year College (Dayton, Ohio, February 17-19, 1977)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Community Colleges; *Content Reading; Higher Education; *Inservice Teacher Education; Junior Colleges; *Low Ability Students; Low Achievers; Reading Consultants; Reading Instruction; *Remedial Reading; *Technical Education; Vocational Education Teachers

ABSTRACT

Even when reading improvement courses are provided for community college students with low reading ability, the students may be unable to apply to their content courses the skills learned in the reading courses. This paper suggests that reading teachers should work with individual content-course instructors to show them how to help their students learn to read and study the chosen text. The paper points out that teachers of technical courses need to develop awareness of the population group they teach, since students in community colleges are, typically, far less academically able than are their baccalaureate counterparts. Teachers need to select textbooks appropriate to the students' reading levels, to demonstrate to students how to read the text, and to preteach vocabulary words. They must show students how to write summaries and papers, and they should be supported in their efforts to write easy-to-read tests for students. Content-course teachers must also consider factors specific to their areas. The paper presents ideas for helping low-ability students in the fields of public service technology, business technology, engineering technology, and health technology. (GW)

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Inservice Diffusion of Reading Into Technical Areas

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Few reading programs are evaluated in terms of outcome, that is success of the students who take the course vs. those who don't. Enrollment in developmental courses is extremely high, however, studies do not show that students having taken a reading improvement course at the community college level experience an improvement in grade point average nor does it prevent their dropping out.

The low ability, high risk students who enter the community college drop out at alarming rates, with some schools reporting as high as 75%! Kurzman reports that 59% of the community college open admission students and 52% of the regular admissions drop out as compared to 51% of the open admission and 30% regular admissions (in baccalaureate college.)

Harris and Parsons describe the community college student body attending over 800 institutions in the United States. Over half of the students, whose median age is 27, work full time and are part time students. Forty percent of them are women who often are the head of a family. Twenty percent of the students are from minority groups. The community college serves a high proportion of low income students. Many have known failure which in many cases has shattered their self image, leaving them without much motivation. The students are commuters who are bound up in their own worlds filled with numerous emotional problems and brushes with the law.

Assumptive teaching, a phrase coined by Herber, will increase the failures of the typical community college student. Content course teachers have assumed that they have no responsibility to help their students read and study the chosen text. The reading teacher has assumed that the students make a transfer of the skills taught in the reading center and apply them to content courses. Apparently nothing is further from the truth.

A growing number of the faculty at our Community and Technical College believe that it is individual teachers who will improve reading skills and grade point averages not the reading center. But lacking knowledge of how to teach reading and writing skills, the services of the reading center are frequently being requested by individual instructors.

Common Skills

Content area courses usually require the students to read one or more textbooks accompanied by outside readings. A paper or term project is often assigned. Seventy five percent of students' grades is based on their ability to read materials in the field. Many instructors expect the college student to use the text for self study, a main objective of college education. However in most cases, textbooks used by college freshmen are many grade levels above their actual reading level. It is not always possible for an instructor to choose an alternative text because of the quality or expertise of a particular writer in an area. However, there are alternatives which instructors can use to enhance students' learning.

Students should be encouraged by their instructors to "high lite" the main ideas in their texts. However, because of their general lack of ability to separate main ideas from details, the reading center has encouraged technical area teachers to point them out.

Note taking can be an asset to learning a new subject, but many students find it difficult to separate key ideas from the instructor's experiences. An idea the center likes to suggest is to have the student divide his note paper into two columns, one column for main ideas, the other for experiences or examples. The instructor stresses what the point of the example is for those who don't get the point themselves.

Often students are instructed to write a summary of an experiment or to summarize an article. What's that? The reading center has done some inservice work with instructors on how to teach students to summarize. In one area, Public Service Technology, a form used by several instructors has been developed.

The typical college student can anticipate meeting fifty to sixty new words per week. Our atypical college student may meet twice that many. Some students understand

the spoken word, but don't recognize the terms in print, so the center encouraged instructors to produce words visually. Such words as puberty, inhibit, mores and bureaucracy give students trouble in print but they understand them when used orally.

Public Service Technology

Public Service Technology attracts many students who have great difficulty with reading. Because of their background and environment, the motivation to enter this field may be intrinsic or it may be an attempt to avoid curriculum that requires difficult reading which will only lead to frustration and failure. To accommodate these students with a vast array of differences, the instructor must offer a variety of learning opportunities including some that exclude reading.

Success in this field does not appear to be wholly dependent on a person's reading vocabulary but rather on their verbal skills, attitudes and pschomotor abilities. The reading center has worked with several instructors helping them to develop course objectives that deemphasize reading and emphasize the building of verbal vocabulary and visual comprehension. For example, the instructor gives the students six words peculiar to public service. In a group discussion, the students must use the words in the proper manner. Role playing, dramatization and interviewing are ways to increase verbal abilities and for students to demonstrate competencies. The students can view tapes to work on visual comprehension. Non reading examinations can be given by using slides which depict the concepts of the course. Verbal answers are a check of the students' cognitive knowledge. Situations can be shown which demand understanding and the ability to apply low level cognitive knowledge.

The traditional lecture and textbook approach is often an inappropriate and noneffective method for teaching nontraditional college students. Instructional alternatives need to be suggested to instructors and help given by the reading center to implement other techniques that may prove more effective.

The perception of the students in this field must be developed by their instructors. On the job, they will often be asked to interview clients, then write up what they see and hear. Too, they may be required to keep an informal log so instructors should emphasize writing skills over reading.

Business Technology

All students in thie program must take at least one course in economics, some must take two. Many approach the "dismal course" with great anxiety and dread. The reading counselor can alert the teacher to this negative attitude and its affect on achievement.

Economic books cannot be read in the old familiar way of reading "it" once and straight through without stopping. In economics, the student will find more information per sentence, per page than in an English or social studies textbook.

Words that economic teachers assume the students know cause trouble. The instructor often speaks of the "vertical" and "horizontal" lines of a graph. Do low achievers understand those words? How about direct and inverse relationships?

Difficult new technical terms crowd the pages which like a new language must be learned. Easy, familiar words appear with unexpected new meanings. The everyday word "utility" becomes technical - with a precise meaning. Utility doesn't mean useful in this field rather it is a measure of expression of an individual consumer's tastes and preferences.

A successful technique for learning vocabulary is the flash card method, putting the term or concept on one side, the meaning on the other. Another way is to have the student set aside a section of his notebook as a glossary.

The divided page is handy for some students. One column is titled "Key Term" and the larger column "Meaning". The dividing line makes it possible to conceal the meaning completely as the student checks his understanding of the term later.

When an instructor gives an assignment, he should advise the students to pre-read the material. Using a moderate speed in general, students should do a once over lightly to take the chill off the reading. Then they are ready for a close intensive reading of the assignment with a high liter in hand. Fifty percent of the time the students will "read standing still." That is they will read then stop to ask, "Do I understand?" or "Can I give an example?"

Students must learn to attend to the diagrams and figures whenever these are present. Economic books,

especially, have numerous diagrams and figures. These require a markedly different kind of reading. The eyes may go backward and forward many times -- suddenly drop down below the line -- make vertical sweeps, even describe arcs and cut diagonals.

As they read the textbook, the students will find constant reference to figures: "in the figure you see," "as shown on the right below," "in figure 8-1". The students must read the textual explanation with special care. When referred to the diagram, they must shift their eyes and thoughts to the diagram. When lines, angles and points are mentioned in the explanation, students must be able to locate on the diagram the letters and numbers that designate these.

Being aware of the difficulty of reading graphs, the instructor might have the students trace certain features with colored pencils. If they use different colors to trace overlapping triangles, each separate triangle will stand out distinctly.

If students merely look at a book as they study economics, their reading will be passive with their thoughts "worlds away." They should think on paper -- a powerful device for comprehension, concentration, and retention. Being active with a pencil has a "no-doze" effect! It is also a way to check comprehension after studying a chart or graph; students should then cover the explanation and write a summary of the main ideas. They are surprised sometimes that they can't do it after one reading.

Students need not leaf through countless pages looking for a meaning or a topic. They have it right at their fingertips in the alphabetical index of their textbook. Yet many students are unaware of its value as a time saver. It takes only a few minutes to mention it, but packs a wallop coming from their technical instructor.

Engineering Technology

The field of engineering technology differs from other subject areas in several ways--ways that need to be called to the attention of that faculty, again, not in a "mass" inservice meeting, but on a one-to-one basis. The engineering field is concerned with great amounts of detailed facts and procedures and not so much with global ideas.

Two primary concerns have been expressed by engineering instructors: 1) the approaches which can be used effectively in helping the poor reader to "read" a highly technical book and 2) the actual readability level of selected tests. Let's take a look at the first concern, that of aiding students to read a heavy-on-details textbook. The reading center has found that because many engineering technology teachers rely almost exclusively on the cognitive domain, and frequently at the lower levels of cognition, a valuable place to train students to begin reading is at the end of the textbook chapter, rather than the beginning. Answering the questions following each chapter become of paramount importance; they provide not only guidance but great motivation. From there the students read the summary and finally returns to the chapter beginning. This is, of course, an adaption of Robinson's SQ3R approach, but differs in that students do not have to question the text themselves. It is done for them by either the text or perhaps an energetic teacher's study guide.

A difficult text used by college students in metallurgy led the center to suggest this technique. The writing pattern of the author is unusual in that he begins with many industrial examples, using technical terminology, and does not normally define the term until the last sentence of the paragraph. Students are told by their instructor to begin with the questions at the back of the chapter to help identify details which are more important than others. The instructor also directs his students to begin with the last sentence in the paragraph and work backwards through the passage.

Another thing that was discovered in examining the questions at the end of general engineering textbooks is that they frequently numbered as many as forty, but were always in random order, not according to topics nor in the order in which they were treated in the chapter. Teachers are now helping students group the questions by topic before they read. This enables the teacher to emphasize particular topics of their own choosing and suggest omission of others.

How did this detailed examination of a particular text begin? It began simply by students' quests for help in the reading lab. When several students seek help in using the same text, quiet "follow-up" took place with the instructor involved. The reading counselor asked the instructor for a copy of the text in order to help students. This led to numerous discussions and eventually to a request for readability, which is the second major area where reading counselors can be very helpful to engineering faculty. Once one readability is done, the requests will start coming in, slowly at first, but continually. Engineers are enthrolled at the idea of a graph or statistical formula

to help determine the readability of a text. For that reason, besides the logical reasons of validity, readability and ease of computation, the center usually recommends either the Fry graph or the Dale-Chall formula. The first text should be done by the reading teacher. It takes time, but from that will come the opportunity to explain the results. More often than not, when teachers request a second readability, they will also ask how to do it.

Health Technology

The field of health technology is similar in many respects to the field of engineering technology. Great attention is paid to details, and the vocabulary load is heavy. It differs in other respects, however. While the cognitive domain is important, more emphasis is normally placed on the affective domain and behavior modification than typical business or engineering programs. This emphasis on the affective domain or on higher level cognition skills of analysis and synthesis lends itself to more creativity in helping students "read" their assigned materials.

Students should be "pre-taught" or directed to essential vocabulary terminology. The teacher should refer them to a word list at the ends of the chapters, or give them a prepared word list. Pointing out how students can identify words within the exposition of the text itself (italics, bold-face print or definition type context clues) is a big help.

But there are more creative ways with greater positive reinforcement which instructors can be encouraged to use by the reading consultant. The college's medical assisting and nursing faculty has found the terminology is retained for longer periods of time if organized around particular body "systems" and presented visually or auditorily. Slide/tapes are available commercially or can be developed by the teachers themselves. Since pronunciation is often difficult, the language master is a valuable tool in aiding the student to learn difficult terminology. Blank cards can be purchased, written or drawn upon, then recorded by the instructor so pronunciation is precise. For longer-lasting cards, it is a good idea to laminate them. Another possibility is to laminate cards first, and use a grease pencil which can be erased and used again for another word. It is also worthwhile to use a few cards for general phonic patterns, to remind students that pronunciation is quite consistent.

The health technology instructors should be encouraged by the reading teacher to use other visual aids for the medical technology student. These might include charts, bulletin boards, and extensive use of study guides, especially those which call for the students to label diagrams.

Reading graphs also are of primary importance to the medical fields. Instructors must be careful to teach students the difference between reading facts by determining the coordinates of the vertical and horizontal variables and inferring information from the facts. The reading instructor must be willing to demonstrate reading techniques in the medical classroom, in be reading lab or wherever the arena might be.

Conclusion

There are some skills common to any technical area but each field has unique problems. They need to be dealt with by the instructor with the help of the reading counselor. Several overriding concerns seem to have evidenced themselves during the last six years since the reading center has been working with faculty members, to improve reading in the technical content areas.

1. Technical teachers need to develop an awareness of the population group they face each day in the classroom. Our typical student differs considerably from their baccalaureate counterparts.
2. Proper book selection by the instructor is essential, with readability an important factor to be considered.
3. Technical teachers need to demonstrate how to read the text they have asked their students to read. Many of the teachers will need help from the reading consultant before they are capable of doing this.
4. Teachers need to be supported in their efforts to write "incredibly easy reading" tests or to give tests via other mediums.
5. Instructors must teach students how to write summaries and papers; traditional assignments are fine if accompanied by guidance, hopefully in the form of a written aid.
6. Pre-teaching of vocabulary is essential. The reading consultant can offer concrete suggestions in this area bringing forth creativity from the technical teacher.

The previous suggestions made in this paper are not new. Perhaps you have read them before. But let us emphasize one major point which may be new to you, or if not new, will be comforting to know that others also have found it to be true: THE BIG INSERVICE, RELEASED TIME EFFORTS TO AID FACULTY IN READING IN THE TECHNICAL CONTENT AREAS IS NOT PRACTICAL, NOR DOES IT NORMALLY PRODUCE LASTING RESULTS.

Instead, we suggest quiet, UNOBTRUSIVE EFFORTS. A one-by-one informal, inservice meeting which takes time but leads to positive results. We call it inservice diffusion -- that's right -- DIFFUSION!

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