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ABSTRACT
        CD-ROMs like other curriculum materials, should be assessed
for use in teaching and learning situations. Appropriate CD-ROM use should
capture student interest, engage learners actively, provide meaningful
learning, assist in providing for individual differences, and help students
perceive the purpose of learning. CD-ROMs can be used to: (1) provide
background information to increase readiness for learning; (2) expand
previously learned subject matter and skills; (3) explore a topic in further
depth; (4) develop selected concepts and generalizations; (5) develop
summaries; (6) obtain information for a report on a lesson or unit of study;
(7) foster cooperative efforts; (8) emphasize critical thought; (9) develop
creative thinking; and (10) apply information in a new setting. It might be
possible to use CD-ROMs in homework or to involve parents, and both parents
and teachers could be surveyed about the use of the CD. CD-ROMS can be
included in curriculum planning, and their use can be evaluated in the ways
other instructional materials are evaluated. (SLD)

Assessing the Quality of CD-ROMs in the Curriculum

Marlow Ediger

ASSESSING THE QUALITY OF CD ROMS IN THE CURRICULUM

CD ROMS, along with other curriculum materials, need to be assessed for use in teaching and learning situations. Students should achieve more optimally when teachers implement CD ROM use in the curriculum. CD ROM use should help in emphasizing the psychology of learning in ongoing lessons and units of study. Thus, appropriate CD ROM use should
1. capture student interest in the curriculum.
2. engage learners actively in learning opportunities provided.
3. provide meaningful learnings so that students truly understand what is taught/
4. assist in providing for individual differences in the classroom in order that a developmentally appropriate curriculum is possible for each student.
5. helping students to perceive purpose in learning. To perceive purpose, each student sees reasons for participating in an ongoing lesson or unit of study (Ediger, 2001, 18-20).

Teachers may be assessed on a five point scale if they are emphasizing each of the five above named criteria involving CD ROM use. Principals, peers, and students may do the assessing. From these results, inservice education may be then provided to guide teachers in using the psychology of learning in teaching students in the classroom.

CD ROMS in the Curriculum

The use of CD ROMs needs to be planned to optimalize its helping students to grow, develop, and achieve. A planned system of assessment needs to be in evidence to determine the worth of CD ROM use in teaching and learning situations. How might CD ROM use optimalize student learning?

1. to provide background information to students so that readiness for learning is in evidence. The background information may be presented in pictorial or abstract form, based on student needs and abilities. High quality images should then be in the offing along with the related abstract content. Learning styles theory (Searson and Dunn, 2001), among other things, emphasizes using physiological factors in student learning such as the use of visual, auditory,and kinesthetic ways of learning.
2. to expand previously learned subject mater and skills. Students need to perceive connections between what is in the learning repertoire and what is new content to be achieved. Perceiving connections is vital in learning. Subject matter should not be seen in

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isolation but perceived as a totality or whole. Perceiving the relationship of knowledge makes for better retention as compared to learning fragmented information. Recall of content acquired improves with ideas being seen in context. Improved retention and remembering of what has been learned previously is desired by all in school and in society.

3. to go into further depth pertaining to a topic or idea. Depth learning is preferable to survey procedures. The latter emphasizes a skimming approach whereas the former stresses intensive learning. Depth learning emphasizes understanding subject matter and skills with a lack of shallowness. True understanding occurs when content and abilities are developed in a detailed way. However, the details are perceived in terms of wholeness, not isolation of content.

4. to develop selected concepts and generalizations. Good teachers stress the identification of relevant concepts for student acquisition. These concepts to be achieved require a variety of learning opportunities including CD ROM use. CD ROMS do have selected content which focus upon learner attainment of concepts. The concepts chosen for emphasis by the teacher need to be important and salient.

Also, the generalizations selected for learner attainment may be realized through subject matter contained in CD ROMS. To achieve a generalization, a variety of experiences for students is needed. Several relevant CDS, along with other materials of instruction, may be used to assist students to achieve vital generalizations (See Ediger, 2000, Chapter Thirteen).

5. to develop summaries. From a mass amount of information achieved developmentally by the learner, there needs to be a way of drawing some kind of tentative finality. Knowledge/skills achieved need to be perceived as tentative, not absolutes, and these need summaries at a given point. CDS may well provide these opportunities to achieve vital conclusions. The conclusion assists the student to relate what has been achieved in order to summarize. The summary may be assessed in terms of including the inherent related concepts and generalizations from #4 above (See Ediger, 1998, 31-35).

6. to obtain information for a report related to an ongoing lesson/unit of study. CDS, in whole or in part, may provide necessary information for gathering a report related to an ongoing topic in the curriculum. The report to be given may be assigned or voluntary. Basing a report on personal interests of the learner can indeed make for an excellent way of reporting. The report many be oral or written depending upon needs of the student.

7. to foster cooperative endeavors. A committee of students working together may find it necessary to locate additional information on the topic being pursued. CD ROMS may well provide the necessary content. Collaborative endeavors are a method of assisting students to learn who possess interpersonal intelligence, in particular. These

students learn best within a collaborative setting. Others do better working individually, such as in intrapersonal intelligence (See Gardner, 1993). To be sure, students need to become proficient in working together with others as well as by the self. Life in society involves both interpersonal and intrapersonal skills. The school curriculum needs to emphasize both intelligences. However, a student may reveal what has been learned with the use of the preferred intelligence. CD ROM content, in whole or in part, may provide the needed data sources for cooperative endeavors.

8. to emphasize critical thought. Here, the student with teacher guidance may contrast and compare CD ROM information with that of the textbook, among other information sources. Analyzing information needs to be highlighted in the curriculum. Thus, content is separated in terms of being factual as compared to opinion, or reality from fantasy. An informed Individual is continually analyzing perceptions received in school and in society (See Ediger, 2001, 13-17).

9. to think creatively in that a synthesis is obtained after analyzing subject matter from #8 above. A synthesis involves tying together the information secured after breaking it down into component parts. Synthesizing stresses a gestalt psychology in that the learner is to perceive an entirety. CD ROM content can provide opportunities for students to integrate ideas. The content then becomes a part of the repertoire of the learner.

10. to make application of what has been learned in a new situation. Applying that which has been learned assists the student to remember and possess retention of subject matter/skills acquired previously. Knowledge which is not used tends to be forgotten or hazy in the mind of the learner. Many uses need to be made of content learned in diverse and novel situations. Some knowledge is learned for its very own sake due to the prizing of these learnings by the individual student. However, in most cases, the learner does like to apply what has been learned. Experimentalism as a philosophy of education emphasizes the utilitarian values of content learned. Content is then used in problem solving situations. John Dewey (1916) was a leading advocate of students with teacher guidance identifying a p problem, gathering information to solve the problem resulting in a tentative solution, not an absolute. The tentative solution then becomes an hypothesis to be tested in a lifelike situation. With additional data gathered, the hypothesis may then be revised, if needed.

A questionnaire may be devised and distributed among teachers to assess how effective each respondent feels CD ROMS are in assisting students to achieve as optimally as possible. Questionnaire results may be used to identify strengths and weaknesses in CD ROM use. Inservice education may be provided to strengthen teacher use of CD ROMS in the curriculum.

Homework and CD ROMS

It may be possible for students to take a CD ROM home to involve parents in homework activities. Parents together with their offspring may enjoy and learn much from a CD ROM. Subject matter and visuals from the CD ROM provide information for student homework. Questions to answer as homework then might well have content come from the CD ROM. This activity might be much more productive to parents and the offspring as compared to the usual watching of TV programs. Advantages of using CD ROMS for these kinds of homework experiences are the following:

1. they promote active engagement of parents in the leaner's curriculum.

2. they might be brought home from school to assist parents and the child to work together for the good of the latter. However, the parent here may also improve the self in the educational arena with knowledge and skills.

3. they provide a variety of activities and experiences in that the student increasingly may use those which harmonize with personal learning styles and intelligences in the home setting.

4. they bring in the visual or semi-concrete experiences together with the abstract for the child and parents when working collaboratively. The visuals help clarify the abstract in ongoing learning experiences in the homework activity.

5. they provide a basis for assessment to ascertain if CD ROMS provide for more optimal achievement by having a definite approach for parents to assist offspring in the home setting. Questions can be sent home by way of internet or Web Site so that there are needed answers to seek by using the CD ROM.

A survey may be conducted by the school to assess the worth of school homework using CDS. Parents, in the survey, may also indicate additional help needed to work effectively with children in the home environment. Positive feedback from parents is welcomed.

Designing the Curriculum

Curriculum development needs to be ongoing in order to provide the best experiences possible for students. Definite provisions need to be made for modern technology including CD ROMS. First, the objectives need to be determined which students are to achieve. These objectives should be relevant and useful for the learner. Three kinds of objectives need to be emphasized namely knowledge, skills, and attitudes. The objectives must be arranged sequentially to optimalize learner achievement and progress. Developmentally selected objectives

harmonize with the present stages of growth and development of students. They also should relate directly to state mandated objectives. High stakes testing to move from grade to grade or as exit exams for high school seniors must stress the psychology of learning. The psychology of learning emphasizes what students can best achieve at a given stage of growth and development.

Learning opportunities including CD ROMS may be used to <u>initiate</u> a unit of study. They need to pinpoint objectives for students to achieve. Leeway must be left for student input into the curriculum such as questions and problems identified by learners. A student centered curriculum needs to be in the offing in that the order of learning opportunities provided optimalize learner interests, purposes, meaning, and values.

After the initiating activities to begin a new unit have been implemented, depth teaching must be emphasized. Here, the student goes more into depth pertaining to the initiating experiences. Intensive teaching is then in evidence. New learnings achieved need to be related directly to the previously achieved objectives. A variety of activities need to be in the offing here.These include CD ROMS, along with other technology and traditional types of materials which foster quality learning. The teacher needs to provide for students of different achievement and ability levels. A student centered curriculum needs to be stressed in that the learner is the focal point when selecting learning opportunities.

Culminating learning opportunities end the unit of study. the interests and purposes of students should remain high. Thus, the culminating activities in the unit help students to

1. summarize and conclude previously developed learnings.

2. develop major concepts and generalizations to the fullest depth possible.

3.   integrate learning opportunities to attain objectives of instruction.

Resolving Issues in Curriculum Development

There are selected issues which need to be assessed in designing the curriculum. These include the following:

1. How much of an open ended curriculum as compared to a teacher directed curriculum should be in evidence? The issue here pertains to having a learner centered as compared to a more hierarchical set of learning activities for students. Realism as a philosophy of education tends to stress measurably stated objectives, predetermined for learner achievement. Basically then, there is no input from students in terms of planning the curriculum. State mandated objectives is an example.

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Experimentalism as a philosophy of instruction stresses the importance of students with teacher guidance identifying contextual problems. The flexible steps of problem solving are then emphasized in the curriculum. Idealism, as a third philosophy of education, stresses an idea centered curriculum in which basic subject matter becomes the heart of the curriculum. Idealists may not emphasize problem solving activities for students; rather, the teacher selects knowledge objectives for students to to achieve, but not in measurable terms. Existentialism, as a fourth philosophy of education, stresses that the individual learner should choose very freely what to learn in an open ended curriculum. Knowledge here is subjective to the student and cannot be measured in terms of achievement.

2. how much rigor should there be in the curriculum? The high standards movement presently being emphasized advocates a high rate of failure for many students, such as in the state of Arizona in which twelve per cent of the high school sophomore test takers failed. All students are then held to the same standards regardless of individual differences possessed among students (Education Week, February 7, 2001).

Or, should a developmentally appropriate curriculum be emphasized whereby optimal student achievement is inherent in teaching and learning situations. Here, each student learns as much as possible based on abilities and talents possessed.

3. How should sequence be determined? Toward one end of the continuum, the teacher may order the objective, the learning opportunities to achieve the objectives, and the assessment procedures. A somewhat opposite sequence may well involve the students in determining their own sequence with teacher guidance.

4. How much of the separate subjects curriculum should be emphasized as compared to the integrated approach? On a continuum then, the curriculum may stress a single academic discipline being studied by students. Or, toward the other end of the continuum, academic disciplines are taught as being related as a unit with few or no distinctions among the subject matter areas.

5. Who should assess learner achievement? This issue involves a top down versus a bottoms up debate. the top down approach includes those who are at the apex of the educational hierarchy. These include state mandated tests, district wide required testing, and for profit companies in education who test student achievement.

The bottoms up procedure includes students with teacher guidance assessing the former , student self evaluation, and portfolio use, among others. At the present time, students are left out of the assessment program unless a teacher believes strongly in learner involved assessment.

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Each of the five enumerated issues needed to be evaluated by those involved in curriculum decision making. Discussions, school district surveys, and research studies need to be in the offing to ascertain how the curriculum should be organized.

Closing

Pertaining to technology/ CD ROM use in the classroom, Valmont (2000) wrote the following:

Until recently, there was so much emphasis on learning how to use computers, how to use electronic mail, how to make a CD ROM (compact disc read only memory) work...that the content of learning was not emphasized. The focus in educational circles today... is on how learning is being assisted (enabled) by modern technology, not of learning technology itself. With computers and technicians in the schools, with public demand for teaching students to use computers effectively, and with the information that students can now access on the internet, the roles of both teachers and students have changed drastically.

Technology, including CD ROM use, certainly has a viable contribution to make to student achievement and progress. CD ROMS are one kind of learning opportunity, among others, to assist students to achieve objectives. Careful attention needs to be given in assessing the effectiveness of CD ROMS and technology as materials of instruction. Questionnaires, experimental studies, action research, and correlational studies may be used to ascertain the effectiveness of CD ROMS in the curriculum.

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