# Literacy and Learning in the Web Based Environment

## Mark Geary

P ACE High School is an inner city community-based charter school for at risk students in the Cincinnati, Ohio area. As such, it is part of the Ohio public school structure and receives its money directly from the Ohio Department of Education. The school, now in its third year of operation, has an enrollment of 400 students. Students attending PACE High School are at risk inner city youth; most "thrown away" from the surrounding traditional public high schools. Students range in age from 14-22; the majority are 2 years older than they should be for their grade placement. Almost half the population at PACE have only enough credits to be classified as $9^{th}$ graders; however, many believe, because they have been in high school for 3-4 years, that they are juniors or seniors.

Entering students in 2004-2005 were given the Nelson Denny Reading Test for high school students. The test results ranged from below $4^{th}$ grade level to a few students at $9^{th}$ grade or higher. The majority of students were reading below their grade level placement. In fall 2006, all students were given the North West Education Assessment (NWEA) test. This test indicated that over half the students had reading and literacy skills equivalent to third and fourth grade levels. Mathematics

skills were slightly higher at upper elementary levels, fifth and sixth grade. Writing skills were also at the mid-elementary levels. The reality at PACE is that literacy skill development needs to be a primary focus of the school while teachers try to prepare students to learn the content measured on the Ohio Graduation Tests (OGT). Students who do not pass the OGT in English, mathematics, science and social studies will not graduate from high school. Students may begin testing in grade 10. They have two chances per year to pass the tests.

Because PACE is an Ohio community charter school and offers web-based classes, it is important that the courses are designed to meet the curriculum benchmarks required by the state to prepare students for the OGTs. Students must learn from well organized, succinct and comprehensible materials.

The faculty at PACE High School consists of the following persons. Two fully certified English teachers. Two fully certified science teachers. Two mathematics teachers with master's degrees who are working on certification. Two social studies teachers, one fully certified, one with a masters degree completing certification. Two fully certified special education teachers and three intervention specialists: one
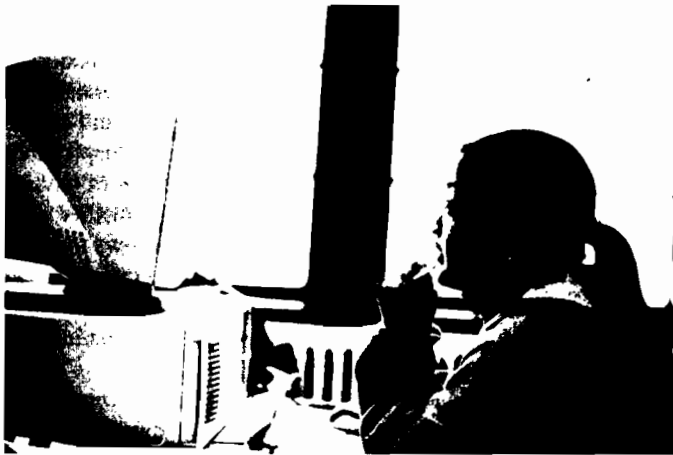
completing certification in special education, one completing a master's degree with certification in special education, and one is working on his bachelor's degree in special education, but has many years of experience in working with troubled youth. The physical education and health teacher is enrolled in an alternative certification program. The art teacher is fully certified. The computer literacy teacher has completed the necessary education courses for certification and holds a long term substitute teacher's license. The staff also includes three technology persons, the executive director (principal), who has previously served as a certified principal and superintendent, a certified assistant principal, an administrative assistant, two community outreach individuals (one whose position is that of court advocate), one alternative education specialist, one security person, five office personnel, a business manager and a principal's assistant.

In order to make the curriculum student friendly, PACE incorporated a number of tools, methods and support systems. First, they have started intensive professional development efforts to help the faculty on literacy instruction techniques. Teachers have been enrolled, at no cost to them, in a content area reading course designed to help them develop a variety of strategies appropriate for the various reading problems common to these students. The relationship between reading and writing is emphasized and incorporated into the course writing strategies for all of the content areas. This is especially important with the implementation of the new Ohio Graduation Tests, which include a heavy writing component.

During the summer of 2006, teachers participated in intensive in-service activities for two weeks to further incorporate literacy skills into their curriculum and to align their curriculum with the state standards and benchmarks. They standardized their courses by dividing the content of each course into 10 units, each unit focusing on specific state standards and concomitant benchmarks. Each unit consists of 5-7 lessons. The in-service was provided by four university professors who had extensive experience in working with curriculum restructuring and alignment and at-risk students.

During spring 2007, all teachers are participating in an on-going, on-line, and face-to-face school wide literacy initiative. The consultant for the professional development has structured her on-line component to model how the teachers can incorporate a variety of literacy skills into their curriculum. Each teacher is provided with a CD that includes examples of different literacy strategies that can be used in each of the classes. These strategies were selected to reflect the needs of the students and the appropriateness for the content. The consultant also will be working in each teacher's classroom to help them implement the literacy strategies. The consultant is a retired professor who has extensive experience in literacy education.

In addition to the formal content area reading course and the summer and spring in-service work, teachers are collaborating with each other and the special education teachers and intervention specialists to reinforce the strategies learned throughout the curriculum. This collaboration is focused on literacy skills, test taking skills, and learning to learn skills. The faculty has developed vocabulary techniques, such as concept mapping, to assist students' understanding of their courses. In addition, students are provided with various "fix-up" reading strategies (Tovani, 2004) they can use while they are working on their classes.

Students entering the school are enrolled in an intensive three week computer literacy course. The course introduces the students to using the computer as a tool to help them learn, to learn how to write short informative paragraphs, and to use grammar and spell check to correct their work. In this class, students learn how to appropriately search the Internet for resources, how to develop a power point presentation based upon their Internet search, and how to create, save and email documents to the teacher. The course uses the computer for writing, reading and adding content to an educational blog, creating a visual writing exercise in photostory3, editing an interview in MovieMaker2 and reviewing reading samples from the OGT.

During the same time frame students are enrolled in Literacy I classes. The Literacy I classes focus on basic reading skills and mathematics skills. There is also a focus on the core strategies of predicting, making connections, visualizing, summarizing and asking questions. The computer literacy teacher and the two intervention specialists who teach the Literacy I classes collaborate as a team and help each other identify the special literacy needs of the students in these first three weeks that the students are enrolled at PACE High School. The teachers working with the students in these classes further identify the specific literacy skills needed of individual students. Students with the weakest literacy skills will get additional help from the special education teachers and the intervention specialists. A new course, Study Skills, has been added to the curriculum since many students simply do not know how to study and learn.

In addition to professional development for the staff, and the required literacy courses, PACE has used five software tools to help students with the web based material. Individually, they have not been a major change, but cumulatively, they have been a tremendous help in meeting the needs of the students.

First, PACE ordered some curriculum materials from Glencoe Publishing. These materials included books, on-line resources (e.g., outlines, interactive WebQuests, flashcards,

etc.), student activities and test construction aids. Also included were student CDs. On the student CDs, the textbooks are in an Adobe Acrobat PDF file format. The acrobat file has sound embedded so the CDs can "Speak" the text to the students. This is made available to the students on-line by integrating the Glencoe PDF with the course web pages.

Second, PACE purchased software to read the webpages to the students. The software PACE uses is called *Read Please*; although there are other programs out there that provide the same service. Since auditory comprehension is higher among these students and precedes reading comprehension (Koriat, Greenberg, & Kreiner, 2002, Trelease, 1993), having course material read to them while they follow along increases their ability to understand it. While the default word-by-word setting is very difficult to follow, the sentence by sentence setting reads fairly smoothly. Students are encouraged to stop frequently to implement the reading strategies of visualize, predict, ask questions, make connections and summarize.

Third, PACE asked its teachers to improve the readability of their courses. This was accomplished by having teachers use the *Flesch-Kincaid Readability Tool* to reduce the complexity of their sentences and their web based text materials. Flesch-Kincaid is part of *Microsoft's Word* grammar check tool. Teachers check the content of their created pages against the Flesch-Kincaid for grade level readability. The average readability level of the text on the web course pages was reduced from 11.5 to 8.5, without sacrificing instructional objectives or the quality of course content. Teachers are continuing to adjust the readability of their materials. The goal is to reduce readability levels to $5^{th}$-$6^{th}$ grade levels, the average level of many newspapers. Teachers were also taught how to use the *Fry Readability Index* which allows them to analyze word difficulty and sentence structure of their materials. Knowing these facts helps the teacher to reduce the word difficulty and sentence length, which in turn reduces the readability level of the materials. For those students with the most serious reading problems, teachers are incorporating more visuals, shorter passages and frequent self-correcting questions and activities designed to check comprehension as students work on-line. To do this, teachers were taught to use *Quia*—a test and activity construction software program that allows the teachers to create self-checking and self-correcting quizzes and activities to provide continuous feedback to the students. Important in working with at-risk students is providing immediate feedback. Having quick feedback available also provides the teacher with the opportunity to try other methods, materials or strategies to help the students understand the content before they get frustrated and quit. *Quia* also allows both teachers and students to keep track of student progress.

PACE also incorporated usability techniques from research on how users and teens (Nielsen, 2005) use web pages. PACE improved scannability (Nielsen, 1997) with the inverted pyramid design of putting information in order of most important to least important and kept the design clean and uncluttered of non-supportive graphics.

The fourth tool used is *Cmap*. *Cmap* is a free software tool available from the Institute for Human and Machine Cognition (IHMC) that makes using and sharing of concept maps very simple. Somewhat similar to the commercial product, *Inspiration, Cmap* provides easy student and teacher creation of concept maps. While not as robust as Inspiration in its graphics capability, *Cmap* has the advantage of having a search feature within the software that looks for other shared Cmaps around the world. This feature allows teachers and students to see how others may be using a concept in their courses. These shared Cmaps tend to be international in scope, making for very interesting viewing, and opening up great collaboration possibilities.

The fifth tool used was Adobe Studio 8's *Dreamweaver*. When Pace started, the course web pages were designed by individual teachers with the help of the tech staff. With *Dreamweaver* and Cascading Style Sheets, PACE has been able to standardize the "look and feel" of the pages so that students are not learning a new interface every time they browse to a different page. *Dreamweaver* also allowed PACE to incorporate 508 accessibility compliance seamlessly into the redesigned course pages.

One of the standard features of the new course pages is a vocabulary section. This benefits students in two ways. First, it gives the students an easily accessible tool for looking up new and unfamiliar words, and second, it helps the teachers focus on what terms are MOST important for their students to learn. The use of the teacher designed vocabulary lists and activities also improves teacher instruction by providing an option for vocabulary building that substitutes for the typical lookup and copy definitions technique that is both frustrating and boring to students and provides little guarantee that students will learn the vocabulary.

PACE has purchased the *Adobe Studio 8* and *Contribute* site licenses. When all courses have been completely redesigned, teachers will do their own updates with *Contribute*. With the XML capabilities of *Studio 8* and our SQL database, PACE hopes to enable student's real time viewing of their progress through a course as it happens.

In March 2007, 170 students are going to attempt the OGT, most for the first time. The month of February will be devoted to preparing the students for the OGT. Each content area teacher is focusing on content, reading skills and writing skills tested on the OGT. Special education teachers and

intervention specialists are working diligently with IEP students and students with more intense reading, writing and mathematics needs to help build their skills and confidence. Teachers and students are hopeful of improving the passing scores on the OGT. Meanwhile, course completion rates are up, attendance is up, and students are beginning to understand the importance of the OGT for their future opportunities.

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