

Adapting reading intervention for online students

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Background Information

With the advances of computer and network technologies, student enrollment in distance education has increased rapidly since the 1990's. In 2003, it is estimated that about 40,000 to 50,000 K-12 students are enrolled in online courses nationwide (Golden, Wicks, & Williams, 2004). With the ever-increasing number of K-12 students who attend online program, researchers state in a report on virtual school in United States that "online education program(s) ... already are having a significant impact on public education" (Watson, Winograd, & Kalmon, May 2004). Most likely, the K-12 online programs will take an increasingly important role in the school system of the United States. According to *Building a Snapshot of Virtual Schools Across the Nation* by Collins, "12 states have established online high school programs and 5 others are developing them... 25 states allow for the creation of so-called cyber charter schools, and 32 states have e-learning initiatives under way" (Collins, 2004). In the future, the option of e-learning will be available to every child for purposes of advanced study, credit recovery or remedial learning.

The target population of a virtual school encompasses gifted students, students seeking credit recovery, and at-risk and dropout students. The focus of this paper is the problematic students who do not succeed in traditional classroom. The at-risk and dropout student population size is shockingly large. In 2000, some 3.8 million young adults were out of school without a high school credential, accounting for 11% of 16- to 24-year-olds in the United States (Kaufman, Alt, & MPR Associates, 2001). In addition, there were 612,900 students, or 1.3% of all public school students enrolled in public alternative schools or programs for at-risk students in 2000 (Kleiner, Porch, & Farris, 2002). Considering the big proportion of at-risk and dropout students, educators should seek effective methods to help them finish their secondary school education.

For students who fail in regular secondary school programs, online learning emerges as either a supplement or replacement for face-to-face classroom instruction. The benefits of attending an online program are its flexible accessibility, individual paces, assistive resources and absence of social label. In an online environment, the students could log into class at a flexible schedule. The Internet allows students and instructors to access the network and teach from anywhere and at anytime where there is an Internet connection and a multimedia computer. Students could revisit course materials whenever they need and pace the learning progress at their comforts. Moreover, there is abundance of study aid resources available online, such as e-dictionary, audio and video elements, and other multimedia technologies, which usually results in a higher learner motivation. Last but not least, the at-risk and dropout students will not feel labeled as less capable during their online learning process. Their desire to become a part of a group and be accepted is fulfilled.

While a large number of at-risk and dropout students are electing the online option, it is the educators' responsibility to produce and deliver effective online learning experience. The research topic is narrowed to reading, because one primary reason for school failure at each behavior is due to reading problems. The struggling children are challenged by decoding and encoding problems, limited word-recognition ability, poor metacognitive skills, or lack of reading comprehension strategies (O'Brien, 2001). On the other hand, in a complexly networked information environment the abilities to read become even more important when reading and writing is the essential form of communication, rather than listening or speaking. Furthermore, reading will "take new forms as text is combined with new media resources and linked within complex information networks" (Leu, 2002), which requires new reading comprehension methods. However, the reading intervention and assessment are still mostly focused on outcome measure from traditional paper and book text, not presenting or evaluating new literacies of this information century. All the above stated are problems that prompt this research. The primary purpose is to explore and elaborate the above questions and to develop and test an online reading intervention module for problematic secondary students to improve their reading abilities.

Comprehension Strategies

To construct a reading intervention module online, research has been done on reading skills in traditional classroom context. According to the National Reading Panel Report in 2000, reading instruction is effective in five

areas: phonemic awareness, phonics, fluency, vocabulary, and text comprehension. However, the emphasis on the five reading skills is different among students of different ages. Generally, the basic reading ability components, such as phonemic and phonics awareness, are essential for early childhood reading interventions. As the children grow older, the emphasis of their reading intervention would shift to the higher-order skills, such as fluency, vocabulary, and comprehension. For secondary school students, more specifically, comprehension is important. Many research findings reveal that poor readers improve their text comprehension by learning to use comprehension strategies (Armbruster, Lehr, & Osborn, 2001; Mastropieri, 2003; Swanson, 1999; Williams, 2002). Armbruster defines comprehension strategies as “conscious plans and sets of steps that good readers use to make sense of text.” Direct evidence shows that “comprehension strategy instruction helps student become purposeful, active readers who are in control of their own reading comprehension” (Armbruster et al., 2001).

Based on previous researches, the following eight comprehension strategies have a firm scientific basis for improving text comprehension. They are respectively a. Activating prior knowledge; b. Recognizing text structure; c. Constructing visual representations; d. Drawing inferences; e. Summarizing; f. Generating questions; g. Thinking aloud; and h. Monitoring and repairing comprehension.

Good readers recall prior experience and information relating to topic to help them understand what they are reading. Research findings indicate that students benefit from prior knowledge about the form and organization of the content (Spires, Gallini, & Riggsbee, 1992) and the background knowledge measure is a significant and reliable predictor of passage-specific comprehension (O. S. Anderson & Acker, 1984; Langer, 1984). When a student has activated prior knowledge, the student is better able to focus on what is important in the text.

Recognizing text structure is another proved effective comprehension strategy. Often, students learn to attend to and uncover text organization through the use of story maps. Researches show that students who recognize the text structure have the greater appreciation, understanding, and memory of the text (Armbruster & Anderson, 1984; Armbruster et al., 2001), and instruction in text content and organization improves students comprehension and memory (J.F. Baumann & Bergeron, 1993; Gersten, 2001; Lorna Idol, 1987; L. Idol & Croll, 1987).

The third strategy is forming visual representations to illustrate concepts and interrelationships among concepts in texts. Proficient readers use mental images to deepen their understanding of the text and solve problems (Rose, Cundick, & Higbee, 1983). Research findings revealed that instructions to form mental imagery, given prior to reading a text, increased literal comprehension and monitoring skills (Chan, 1990; Gambrell & Koskinen, 1982).

Drawing inferences is the process that is involved as students make predictions before and during reading. This process includes judging, concluding, or reasoning from given information. It has been described by some researchers as the heart of the reading process (R. C. Anderson & Pearson, 1984). Researchers have found that readers improve their abilities to construct meaning when they are taught how to make inferences (Hansen, 1981; Hansen & Pearson, 1983; Raphael & Wonnacott, 1985).

A summary is a synthesis of the important ideas in a text (Armbruster et al., 2001). To summarize a reading text, students are required to determine what is important in text, to eliminate redundant and unnecessary information, and to condense the main ideas into their own words. Summarizing has been shown to be an important strategy in help readers improve their abilities to construct meaning and writing (Taylor & Beach, 1984).

Teaching students to ask questions improves their active processing of text as well as comprehension. By generating questions, students learn to ask themselves questions that require them to integrate information from different segments of text (Armbruster et al., 2001). Brown and Palincsar (Brown & Palincsar, 1982) and other researches (Andre & Anderson, 1979; Buehl, 2001; Cohen, 1983) demonstrated how effective student-generated questions can be in helping students to improve their abilities to construct meaning and to motivate reading interests.

Students thinking aloud has also been shown to increase comprehension (J.F. Baumann, Jones, & Seifert-Kessell, 1993; James F. Baumann, Seifert-Kessell, & Jones, 1992; Davey, 1983; Oster, 2001). This strategy requires a reader to verbalize his/her thoughts as they read. While they stop periodically in reading, they spend time reflecting on how a text is being processed and understood.

Monitoring, the process of knowing when what you are reading is not making sense and having some means for overcoming the problem, is an important part of students’ metacognitive development. Successful learners monitor their own comprehension and adjust their learning strategies accordingly (Brown & Palincsar, 1982; Paris, Lipson, & Wixson, 1983). Strategies for monitoring include asking oneself if the reading is making sense, rereading, reading ahead, looking up words in the dictionary, guessing word meaning, or asking someone for assistance.

In addition to identifying which comprehension strategies are effective, scientific research provides guidelines for how to teach these comprehension strategies. Research findings indicates that effective comprehension strategy instruction is explicit or direct (Dole, 2000; Duffy, 2002; Hancock, 1999; Mastropieri, 2003; Swanson, 1999). When teaching comprehension strategies, teachers tell readers why and when they should

use strategies, what strategies to use, and how to apply them in explicit language. The components of explicit instruction typically include direct explanation, teacher modeling (“thinking aloud”), guided practice, and application (Armbruster et al., 2001) or independent use of strategies.

Recommended Intervention & Conclusion

Recommended Intervention

In the secondary online reading remedial program, students need to be taught to become strategic readers by learning the effective comprehension strategies. How should we teach that in the online environment? Shall we copy every step we have had in face-to-face classroom in online learning modules? What changes we should make in web-based reading intervention? Since distance online education is different from traditional school environment (Dzuiban, Shea, & Arbaugh, 2004; Easton, 2003), students are no longer listening to a lecture with eye contact and gestures from the teacher. The online learning unit needs to be redesigned, and a new instructional strategy needs to be adopted (Dzuiban et al., 2004; Easton, 2003). Effective instructional steps in face-to-face classroom could be adapted in the online context while network and technology resources are integrated to compensate for the loss of face-to-face interactions.

The proposed online strategy instruction module teaches students one of the above comprehension strategies, “Activating Prior Knowledge”. This web module encompasses elements from student engagement, explicit explanation, teacher modeling, and learning outcome evaluation. All the necessary components of explicit instruction are integrated within the designed online strategy. The module script is attached in the appendix.

At the beginning of the course, students are welcomed by instructor and given a direct explanation why the strategy helps comprehension and when to apply the strategy. The technology media chosen in this part include text, graphic, or multimedia illustration, if needed. Different media are used to motivate students so that they are not turned away by boring preaching.

Refer to Figure One

After students are taught of why and how the strategies are to be used, a video link is provided in which either a teacher or a student models or demonstrates how to apply “Activating Prior Knowledge”. In this video, the teacher would verbalize their thoughts while reading a text that the students are using. The teacher would model the three types of connections that students can make between text and their own knowledge and experience separately. In this way, it is easier for students to copy the teacher’s instruction and transfer the strategy into their own reading process.

Refer to Figure Two

After watching the strategy modeling video, students proceed to a practice test at the guidance of their parents or mentor. Students would download an activity sheet and practice orally using this strategy with parents or mentor and fill in an activity form. In the designed activity, students are encouraged to read one small piece of news from an online kid magazine. They are instructed to link their background knowledge before, during and after reading process respectively. It is important the students are doing this practice with their parents or mentor, so that they might be offered help or monitored throughout the process.

Refer to Figure Three

The fourth step is one student activity which is supported by one type of distance communication tools, such as bulletin board discussion, online chatting room, telephone conferencing or even telephone calls. Now students would write down what they have practiced orally and post their thoughts in the discussion area. In this way, learners could read other students’ postings and learn from how to make connections and how to apply the strategy. The collaborative activity is designed here to help build a learning community between students to enhance learner-learner interactions, thus promoting higher learning motivations.

Refer to Figure Four

The last component of the designed module is evaluation. This is comprised of a quiz to test students’ verbal knowledge of strategy definition and guidelines and a reading assignment for them to apply the strategy independently. The quiz takes format of true/false, multiple choice and short answer questions, to evaluate students’ abilities to identify why, when and how the strategies are carried on in reading process. In the reading assignment, they are instructed to read one chapter of a story book and write a three-paragraph assignment using “Activating Prior Knowledge”. A detailed rubric is given so that students could follow certain format to finish their assignment. Refer to Figure Five

Conclusion

To help secondary school at-risk or dropout students, reading is an indispensable instructional area. In this paper, the importance of comprehension strategies instruction is stressed as one integral part of online reading remedial program. At the same time, this paper also points out some remaining challenges for educators and researchers of distance education. Major areas are now discussed.

1. Comprehension strategies help low-performance students to become strategic readers. In distance learning where reading and writing are the main methods for information communication, disabled students need to learn these strategies to construct meaning in all content subject areas.
2. Students can be taught to use comprehension strategies through explicit instruction. The five steps of explicit instruction can be adapted in online setting, with integration of computer and network components, such as web pages with text and graphics, bulletin discussion, and audio or video elements to guarantee a high-quality interactive online learning experience.
3. The online reading module of teaching "Activating Prior Knowledge" has been designed and developed based on an e-learning instructional strategy integrating the effective traditional instructional approach and well-selected technical media. Further experimental research needs to proceed to test its effectiveness and validity.
4. More reading modules on teaching other reading skills, such as phonemic, phonic, fluency or vocabulary either in a separate or integrated fashion, should be developed and tested in future for facilitating reading skills for secondary-level low-performance students.
5. Besides the eight evidence-proven effective comprehension strategies, navigation is identified as another essential strategy for reading online. This is a unique but important information searching and evaluation method in online learning process. Recent studies call attention to such skills of locating and analyzing web information (Leu, 2002; Schmar-Dobler, 2003) in new networked information literacies. However, further empirical evidence is needed to prove its value on students' comprehension during their webpage reading. Research should be conducted to support its importance in distance learning process and to provide guidelines for how to teach this strategy.

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