Research Basis of the Underlying Premises of DynaNotes™ Plus App for Student iPads

There is an abundance of research supporting the design of the review guide content displayed within the DynaNotes Plus app for student iPads, including the use of:

- text organization
- graphic organizers
- vocabulary development/reinforcement
- color and color coding

Research in the form of case studies also exists on the instructional value of iPad use by students:

- enriched, enhanced, and extended instruction for ELL students
- improved reading skills and academic performance for students with ADHD

Text Organization

In their 2010 article in Reading Psychology, McTigue and Slough describe the concept of text accessibility. They state that informational texts must include the following features to enable comprehension: concreteness, clear author's voice, coherent writing structure, proper incorporation of visual aids, and integrated visual and verbal information. Researchers Lorch, Lemarie, and Grant (2011) found that using hierarchical organization and signaling devices like headings led to quicker text searches. Similarly, a 2010 study by Cauchard, Eryolle, Cellier, and Hyona supported the use of devices like topic headings to aid in the search process.

DynaNotes review guides are all well-organized and logically structured using headings and subheadings. The guides provide signals and scaffolding so students can quickly locate information and acquire the skills and knowledge required to independently master grade-appropriate concepts. The guides also incorporate visual information that enhances the text.

Graphic Organizers

Graphic organizers are visual representations of concepts and ideas. Gallavan and Kottler (2007) describe graphic organizers as visual tools that aid in the understanding, application, and organization of information. Graphic organizers can help sort information, view relationships, show meaning, and manage data.

A study of algebra students by Bob Ives (2007) showed that those participants who received instruction that included graphic organizers performed better on posttests than those who did not. Erin Fealy (2010) found in her case study of third-grade students that graphic organizers assisted students in locating and comprehending information within texts.

Graphic organizers can help English language learners and students with learning disabilities use advanced organizers and guided notes to review geography content.

DynaNotes review guides incorporate graphic organizers, including tables, diagrams, models, graphs, and maps, to help students comprehend and organize key concepts and skills.

Vocabulary Development/Reinforcement

Research recommends vocabulary development and reinforcement for all students. A study of 21 sixth-grade classrooms by Kelley, Lesaux, Kieffer, and Faller (2010) showed that teaching academic vocabulary in meaningful and systematic ways helped to improve students’ vocabulary and reading comprehension.

Madeline Kovarik (2010) states that vocabulary instruction is critical in content areas, and particularly so for economically disadvantaged students who may come to school with limited background knowledge. The research of Burgoyne, Whiteley, and Spooner (2009) showed that the difficulties that English Language Learners have in understanding texts are related to these students' significantly lower level of vocabulary knowledge. Likewise, Jalongo and Sobolak (2011) assert that students need to be actively engaged in vocabulary development to show vocabulary gains. Those students who speak English as a second language and those who are economically disadvantaged are particularly at risk of not making vocabulary gains. Medina et al. (2007) in Science Teacher proposes that English Language Learners may benefit from explicit teaching of new scientific vocabulary. Sharilyn Daniels’ 2009 study found that English Language Learners showed gains when they were provided with intervention that included exposure to vocabulary words, definitions, model sentences, and context.

DynaNotes review guides provide definitions for key content area vocabulary words. The accompanying examples and images help reinforce vocabulary in appropriate contexts.

Color Coding

Valerie Kirschenbaum states in her 2006 Educational Leadership article that today’s texts must compete with more visually exciting modern media forms like movies, television, and the Internet. To do this she suggests designing instructional materials with colored words, varied font sizes, and colorful imagery. She claims this will greatly improve student achievement and engagement. Her ideas are supported by the research work of Ozcelik, Karakus, Kursun, and Cagiltay (2009). Their study of fifty-two participants showed that the use of color coding increased retention and performance. Color coding helped the participants more efficiently locate important information.

DynaNotes review guides color code key vocabulary words, definitions, and examples. The accompanying colorful visual models, images, and examples are also intended to increase comprehension and interest.
iPads Use in ELL Programs
Jennifer Demski states in her 2011 *T.H.E. Journal* article that both Comal ISD in Texas and Township High School District 214 in Illinois transformed their ELL programs by giving students access to iPads or iPods. The Comal ISD instructional media specialist reports that the most-used app by ELLs was the free Dictionary.com app. Students reported that before they had their iPod or iPad, they would ask a teacher or do nothing if they did not know a word.

DynaNotes review guides function as course-specific vocabulary and concept references for students. Keyword search allows students to find definitions and repeated usage of key terms. Definitions are appropriate to the grade level and course, as opposed to a dictionary’s provision of multiple meanings and usages. Additionally, definitions are provided with related content and, thus, are in an appropriate context.

iPads Use with ADHD Students
McClanahan, Williams, Kennedy, and Tate report that iPad usage during tutoring sessions with an ADHD student boosted reading skills, including metacognition, by one grade level in six weeks’ time. Gaining focus and interest in the lessons was cited as a key reason for the observed growth. A research review conducted by Raggi and Chronis supports the position that computer-aided instruction may be especially beneficial to students affected by ADHD.

The *DynaNotes Plus* app for student iPads enables students to add their own notes to each section of course content via text (type or copy/paste) or using the iPad camera. They can use the notes section to add helpful links to computer games or other online content. This feature enables students or teachers to personalize the course content and extend the iPad experience to a variety of other online content.

References