A Comparison of Guided Notes and Video Modules in an Online Course

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ABSTRACT
The purpose of the study was to compare the effects of guided notes versus video modules as a supplement to textbook readings on student quiz scores and to evaluate the overall effectiveness of guided notes in a fully online course. A total of 15 graduate students, aged 22 to 30, participated in this study. The study combined an adapted alternating treatments design and a pretest-posttest design with all participants experienced in both teaching methods in the same sequence. The experimental conditions contained the textbook readings supplemented with guided notes versus video modules. Results indicated both guided notes and video modules were effective, but students’ quiz scores were significantly higher under the video modules condition than the guided notes condition. No difference was found in students’ perceived helpfulness of the materials, but the students enjoyed video modules significantly more than guided notes.

KEYWORDS
Applied Behavior Analysis, Guided Notes, Higher Education, Online Instruction, Video-Based Instruction

INTRODUCTION
In recent years, online learning has become an increasingly popular trend in education for learners with various needs and abilities across disciplines. This educational trend is growing fast at the university level. According to the U.S. Department of Education, National Center for Education Statistics (2018), 29% undergraduate and 34.4% graduate students took at least one distance education course in the 2015-2016 school year, while only 16% undergraduate and 17% graduate students did so in the 2003-2004 school year. Online learning offers flexible and convenient opportunities for learners and is a cost-effective alternative for schools (Buzhardt & Semb, 2005).

Many of the applied behavior analysis (ABA) programs in universities are offered in a fully online format. Currently, the Behavior Analyst Certification Board (the credentialing agency of ABA programs in universities) has approved 93 fully online ABA programs, which is approximately 32% of all on-campus and online programs combined (Behavior Analyst Certification Board, 2016). With the increase of online ABA programs in universities, it is imperative to develop and evaluate effective practices for these online courses.

LITERATURE REVIEW
Research in ABA has traditionally emphasized effective teaching strategies for all learners, including university students. The teaching strategies implemented at the university level were originally evaluated in face-to-face classrooms (e.g., Boyce & Hineline, 2002; Fienup, Hamelin,
Reyes-Giordano, & Falcomata, 2011; Heward, 1994; Keller, 1968). With the explosive advances in technology, Skinner’s (1958) teaching machines can be feasibly programmed as part of online instruction. Behavior analysts have attempted to integrate the technology of process (i.e., effective teaching practices derived from behavioral research) into the readily available technology of tools for individualized learning (Twyman, 2015). Thus, recent research efforts in pedagogy have gradually extended from the traditional classroom to the virtual classrooms (Martin, Pear, & Martin, 2002a; Pear & Crone-Todd, 1999; Sella, Ribeiro, & White, 2014; Walker & Rehfeldt, 2012). For example, Keller’s Personalized System of Instruction (PSI) was re-evaluated in web-based learning systems and found effective to improve student performance for college students in the virtual classroom (Martin et al., 2002a; Martin, Pear, & Martin, 2002b; Pear & Crone-Todd, 1999).

Several features of PSI have been successfully incorporated into an online format that includes self-paced learning modules, small instructional units, frequent unit quizzes, and a mastery requirement for each unit. However, because of PSI’s emphasis on written responses, the use of proctors to provide accurate and timely feedback on frequent quizzes can be quite challenging (Martin et al., 2002b, 2002a). Equivalence-based instruction is also programmed to teach derived relations in a variety of academic subjects at the college level, but empirical support for effective instructional practices to promote derived relations remain limited (Fienup et al., 2011). Despite the challenges, the findings indicate that integrating empirically validated online teaching strategies for individualized instruction, is both feasible and practical. The instruction in the previously mentioned studies consists of multiple teaching strategies derived from behavioral principles designed to engage learners in active participation to make online learning effective. However, many evidence-based practices developed and evaluated in traditional in-person classrooms are still in need of empirical validations when implemented in an online format.

The use of guided notes in traditional classrooms is an evidence-based teaching practice. However, research on the use of guided notes in online learning is limited. Heward (1994) defined guided notes as instructor-prepared incomplete notes with spaces for students to fill out keywords or information during lectures or independent reading. Specifically, students follow the lectures or readings by taking accurate notes on key concepts without missing important information and then use the notes to guide their study. Guided notes are implemented in a wide range of disciplines in universities to promote student engagement and enhance learning (Larwin & Larwin, 2013; Reed, Rimel, & Hallett, 2016). Using guided notes in university instruction improved overall student performance in exams, compared to complete notes prepared by the instructors (Neef, McCord, & Ferreri, 2006) or simply note-taking by students with instructor’s handouts (Austin, Lee, Thibeault, & Bailey, 2002; Bahadourian, Tam, Greer, & Rousseau, 2006). Besides university instruction, guided notes were also used in elementary and secondary schools to facilitate learning for students in general education and special education (Konrad, Joseph, & Eveleigh, 2009; Larwin, Dawson, Erickson, & Larwin, 2012). Since empirical evidence supports the use of guided notes, it may be helpful to adopt this practice to an online format to increase active participation for each student enrolled in an online course.

Since the U.S. Surgeon General and many other authoritative agencies endorsed ABA-based ASD interventions (U.S. Department of Health and Human Services, 1999), the demand for ABA professionals providing autism interventions became increasingly high in recent years. As discussed previously, fully online ABA programs increased dramatically for the purpose of training qualified professionals. Many of these programs are autism-focused ABA programs with instructional content designed specifically for the applications of ABA principles in autism interventions.

Autism Training Solution (ATS), currently in Relias Learning, is one of the online training programs created to provide autism-focused ABA training for professionals, staff, and parents working with individuals with autism. The instructional methods used in ATS are comprised of several effective teaching strategies derived from behavioral research, including sequenced small-units, unit quizzes, unlimited attempts to pass unit quizzes to ensure mastery of content material, video modeling of
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