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TEACHER-READY RESEARCH REVIEW

A Comprehensive Review of Interteaching and Its Impact on Student Learning and Satisfaction

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This review provides a historical overview of behavioral teaching methods that have demonstrated efficacy across age groups, educational levels, and disciplines. In particular, we focus on a recent behavioral teaching method known as interteaching to highlight its effectiveness as a user-friendly alternative to the traditional classroom lecture. Applications of prior behavioral teaching methods will be briefly highlighted, followed by a more thorough overview of the empirical data to date supporting interteaching as an effective behavioral teaching method to increase academic engagement, learning, and satisfaction in the classroom. Key recommendations for pedagogy resulting from this research and a guide for future directions are provided.

Keywords: academic performance, behavioral teaching methods, college teaching, interteaching

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Behavioral teaching methods (BTMs) made their way into the classroom five decades ago, with the introduction of programmed instruction, when behavioral psychology was in its prime (Holland & Skinner, 1961). These teaching methods are most recognized for promoting flexibility in the classroom and catering to individual learning repertoires (Fox, 2004). Their dedication to scientifically validated procedures has appealed to elementary, intermediate, and college instructors who seek alternatives to traditional classroom arrangements to enhance student learning and participation (Saville, Lambert, & Robertson, 2011). Instructors, still a significant part of the classroom, redefine their roles based on the BTM paradigm to support knowledge acquisition, maintenance, and application. As a result, students learn to have more control over their learning and do not rely solely on the instructor for delivery of information.

A relatively new BTM, known as interteaching, is the main focus of this review. Interteaching capitalizes on key components of previously implemented BTMs and the well-established principles of learning. *Interteaching* is defined as "an arrangement for college classroom instruction that departs from the standard lecture format and offers an answer to criticisms commonly directed at behavioral teaching techniques" (Boyce & Hineline, 2002, p. 215). Through a combination of various factors, including assignments to guide study time outside of class, immediate delivery of constructive and supportive feedback from both classmates and instructors, and frequent knowledge probes, this BTM rearranges the classroom contingencies so that students do not have to rely solely on self-management strategies to perform well in a course.

The purpose of this review is to: (a) provide a general overview of BTMs that have demonstrated success in the classroom prior to interteaching, (b) compare interteaching with

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prior BTMs, (c) comprehensively discuss previous applications of interteaching, (d) provide key recommendations for pedagogy resulting from interteaching research, and (e) provide a guide for future directions in this area of research. Through these objectives, we also aim to extend a recent review article by Saville, Lambert, et al. (2011).

General Overview: BTMs

Since the inception of Holland and Skinner's (1961) seminal manuscript on programmed instruction, several BTMs, including interteaching, have evolved from the field of behavior analysis. These BTMs, chronologically developed, build on strengths and address limitations of the preceding models. In the following paragraphs, each approach will be reviewed briefly alongside a research-based application that focused on a comparison of traditional lecture to each behavioral teaching method discussed. This section of the review does not intend to be comprehensive, but rather to highlight some of the applications of past BTMs. For a more comprehensive review of BTMs, see Moran and Malott (2004).

Programmed Instruction

Programmed instruction is well recognized for its unique feature of capitalizing on a learner's interactions with visual and verbal instructional prompts. These prompts set the learner up for success with the goal of accurate completion of a specific lesson with minimal effort and quick transitions to more advanced lessons. The prompts also help the learner self-monitor progress by providing immediate feedback for all responses. Prompts utilized in programmed instruction promote immediate knowledge acquisition, ensure solid mastery of each assigned lesson, and enable smooth shifts within coursework. In a typical programmed instruction classroom, the learner interacts with an automated device such as a personal computer or a specially prepared workbook that sequentially presents teaching material and testing items in sizable steps. The learner paces herself or himself through the lesson, and frequently interacts with fill-in-the-blank or multiple-choice type assessments embedded within the lesson. When the learner answers a question correctly, the automated device allows him or her to proceed to subsequent portions of the course. On the other hand, when the learner answers a question incorrectly, the automated device withholds reinforcement and immediately provides a prompted correct response to increase the learner's probability of getting the question right on the next opportunity.

Harrington (1999) compared the effects of programmed instruction to lecture in a prerequisite statistics course for graduate students in a social work program. Thirty-three students (N_{female} = 27, N_{male} = 6; M_{age} = 35.5) were assigned to a programmed instruction/distance learning statistics course, and 61 students (N_{female} = 51, N_{male} = 10; M_{age} = 35.6) were assigned to a course that implemented traditional lecture. Results suggested students that entered the course with a high grade point average (GPA) performed equally well in the online course as in the traditional lecture format. However, students with low GPAs tended to perform better in the traditional lecture format, perhaps due to lack of exposure to online learning tools (Harrington, 1999; Portier & van Buuren, 1995).

Precision Teaching

Precision teaching is considered a branch of programmed instruction (Lindsley, 1964), as it also promotes errorless learning. However, instead of capitalizing on the delivery of prompts as used in programmed instruction, precision teaching uses massed trials. As one of the earliest BTMs to be implemented across various learning repertoires, precision teaching can be linked to fluency training, wherein "additional learning opportunities (are) provided beyond the point of 100% accuracy" (Binder, 1996, p. 10). Precision teaching focuses on directly observable and quantifiable behavior, and frequency measures are used to evaluate student performance. To illustrate, in a typical precision teaching classroom, the teacher arranges the learning environment to encourage optimal responses from a group of students. The teacher vocally delivers instructions and prompts, while students provide their answers in unison, independently track their individual performance on daily response records.

Johnson and Layng (1992) successfully adapted Lindsley's (1964) precision teaching

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methodology with job seekers and precollege learners seeking enrollment in community colleges. In this study, researchers exposed participants to programs focused on developing critical thinking, reasoning ability, organization, and study skills. Despite absences, more than half of the participants in both programs significantly improved their academic abilities and preoccupational skills. Precision teaching assisted these individuals to advance their mathematical computation and problem-solving skills after receiving training via continuous fluency sprints and testing that focused on brief periods of timed practice, measurement, and charting. As such, without the use of traditional lecture, the participants advanced to higher professional degrees by means of precision teaching's continuous instruction, prompting and independent tracking of academic performance.

Personalized System of Instruction

Another revolutionary contribution to the field of education was Keller's (1968) personalized system of instruction (PSI), otherwise known as the Keller-plan. PSI capitalizes on a student's self-paced, individualized instruction. In a typical PSI classroom, the teacher provides the learner with a written study guide containing course objectives and questions that help direct the student to learn and master a topic independently. The student takes a quiz after going through course material and must achieve a minimum score of 80%–90% to move on to the next unit. If the student fails on the first attempt, two additional opportunities are provided. If the student requires additional performance feedback to understand the course material, assigned proctors reach out to the student before providing an opportunity to retake a quiz. Apart from repetitive testing to gain mastery on a specific area of interest, PSI emphasizes the importance of self-pacing and the need for continuous feedback from a knowledgeable source to ensure a more pliable, effective learning process.

Two studies conducted by Gray, Buerkel-Rothfuss, and Yerby (1986) and Jumpeter (1985) support PSI's effectiveness, but only when this method is used in conjunction with conventional teaching methods. Gray and colleagues (1986) examined the components of PSI to determine their positive effects on the student learning process, satisfaction, and mastery of course material. The authors implemented a two-part study to examine the relative differences between a PSI-based and a lecture-recitation format of instruction on an introductory speech communication course in terms of: (a) course satisfaction, (b) student mastery of course content, (c) improvement in personal communication skills, (d) speech anxiety levels, and (e) retention levels. Students assigned to PSI-based sections expressed higher course satisfaction, course content interest, self-esteem that resulted in higher final grades, and engagement in various communication contexts. They also reported lower levels of speech apprehension compared with those assigned to traditional lecture. However, on the basis of the authors' analyses, students from the lecture-recitation group experienced relatively high perceptive levels of communicative abilities and learning, no different from the PSI-based group.

Jumpeter (1985) reported opposing findings on the academic effectiveness of PSI in comparison to lecture. The author analyzed the differences between PSI and the lecture-demonstration method in a study with 35 freshmen and sophomore students ($N_{PSI} = 19$, $N_{control} = 16$) enrolled in a music appreciation course. According to the findings, the groups showed no difference in their listening skill improvements or switching from one musical opinion to another. Students assigned to the PSI group had zero to minimal experience with Learning Activity Packets and mastery tests, and found them more restricting and time-consuming than reading lecture notes and listening to musical recordings.

Direct Instruction

Unlike the flexibility of student-driven, self-paced instruction incorporated into PSI, Engelmann and Carnine's (1982) direct instruction is teacher-driven, more rigorous, and fast-paced; although both BTMs capitalize on student−teacher interactions. Direct instruction is more structured and scripted via step-by-step instructions for the teacher to follow. The primary goal of direct instruction is to do more in less time (Marchand-Martella, Slocum, & Martella, 2004), and its consumers are predominantly preschool-age to school-age children. There are only a few published studies that have integrated the use of direct instruction with college students, one of which highlighted its application on 26 students

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with learning disabilities and their acquisition of algebraic concepts (Kitz & Thorpe, 1995).

Students in Kitz and Thorpe's (1995) study were recent high school graduates admitted to an 8-week summer transition program (Project Success, University of Wisconsin−Oshkosh) that assisted in decreasing the probability of academic failure in college algebra. Participants were assigned to one of two groups: the control group (N = 13, M_{age} = 18.8) received a traditional textbook, while the experimental group (N = 13, M_{age} = 19.2) received a videodisc mathematics instructional guide using a stranded design in its delivery of lessons (i.e., comprehensive review with recurrent exercises on previously discussed mathematical concepts; System Impact, 1986). Participants assigned to the videodisc group scored significantly higher than the textbook group both in the posttest, $F(1, 25) = 27.33$, $p = .00$, and in quiz scores from their first algebra class, $F(1, 25) = 7.03$, $p = .01$, likely due to the more structured, fast-paced nature and instructor-driven, fluency-based approach characteristic of direct instruction.

Meyer, Gersten, and Gutkin (1983) used direct instruction techniques with low-income third-, fourth-, and fifth-graders enrolled in Project Follow Through and attempted to distinguish the difference in their mean grade equivalents in the Miller Analogies Test, the Stanford Achieve Test, and the Comprehensive Tests of Basic Skills with those of students in the same school district who received traditional educational programs. In this longitudinal study, only the Follow Through students maintained their average to above-average mean scores as they progressed through intermediate grade levels. These results provide support for direct instruction's consistent emphasis on small-group instruction, and constant monitoring of student progress by means of criterion-referenced tests.

Other Teaching Methods

Three other teaching paradigms that share similar features of interteaching, but are not behavioral teaching methods per se, are Reciprocal Peer Tutoring (RPT), Problem-Based Learning (PBL), and Cooperative Learning. Reciprocal peer tutoring is similar to PSI in its emphasis on students' relationship with a knowledgeable source (in this case, a peer). This method evolved from cooperative learning strategies and highlights students' ability to coinstruct when they are presented with the opportunity to prepare lessons with a knowledgeable mentor and to study these lessons alongside peers. As a result, students build a symbiotic and interdependent social support system with their fellow learners. Barrows' (1996) PBL and Johnson and Johnson's (1975) cooperative approach to learning derive their principles from PSI and RPT, which capitalize on student-centered teaching, especially in college classrooms. Problem-based learning involves a small number of student experts who extensively contribute to discussion, whereas cooperative learning relies on the entire class to actively participate in a lesson, promoting an interdependent group contingency (i.e., each student collaborates and participates in class discussion).

Eustace (2008) implemented both traditional lecture and alternative teaching elements (i.e., combination of active problem-solving and hands-on experimentation) from PBL and cooperative learning into a 3-year project at the University of Dayton. This study aimed to improve an undergraduate transportation-engineering course. In both the traditional and alterative teaching conditions, students met with the instructor and their peers three times per week for 50 mins each, forming groups of two or four depending on the class size. Although no significant differences between the two groups were reported based on homework, exams, and final grades, students reported a preference for PBL and cooperative learning with respect to relevance for their studies and professional development. As such, on the basis of the findings, a healthy combination of traditional lecture, PBL, and cooperative learning would ensure high student preference and academic achievement.

Interteaching

Interteaching places an emphasis on active student-driven learning, peer teaching, class readiness, instructor facilitation, frequent tests for mastery, use of positive reinforcement strategies, and immediacy of feedback on the learning process. These characteristics make it a highly effective

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method that can be used in a wide range of classrooms and disciplines.

Interteaching has several key components that work together to promote the experience of academic learning to be more rewarding for both students and instructors (Mason, 2012). First, a preparation ("prep") guide that typically consists of 10 to 12 questions, outlines a required reading and functions as a study guide to facilitate engaged, quality class conversations among students. The prep guide questions use a shaping-type format in which the questions proceed from definitional-type questions to application and synthesis questions (Saville, Lambert, et al., 2011). Important considerations when designing a prep guide include (a) consideration of the course learning objectives, (b) discussion topics needed to address these objectives, and (c) discussion time needed for student completion of the prep guide during class time (Brown, Killingsworth, & Alavosius, 2014). The prep guide is typically distributed to students either via hard copy (e.g., printed Word document) or via a course website (e.g., Blackboard). Distribution happens at least a few days to a week prior to the start of the next class session.

A second component of interteaching, the discussion (also known as the interteach session), consists of pairs of students sharing answers, and reviewing assigned prep guide questions during class time as the instructor transverses the room to answer questions and ensure students stay on topic. Students are expected to be informed and active contributors during these discussion sessions, and use a collaborative approach to address complex discussion points. The formation of the groups is an important consideration in that students are encouraged to work with different members of the class during each session.

A third component of interteaching, the record sheet, allows students to provide frequent feedback to instructors about which problems were difficult for the student group to address, the quality of their discussions, and the amount of assistance provided by group members. Students may also use the record sheet to ask for assistance with difficult topics that need further clarification. The instructor then reviews all of the feedback from the record sheets and prepares a short clarifying lecture that allows for all topics identified by the study to be discussed at the beginning of the subsequent class meeting.

This fourth component of interteaching, clarifying lecture, is designed to take approximately one third of a class period. Boyce and Hineline (2002) recommended that the clarifying lecture take place shortly or immediately after the interteach session, so as to be in close temporal relation to the end of pair discussion. On the other hand, Saville, Lambert, et al. (2011) suggested postponing clarifying lecture until the following class period, to allow the instructor sufficient time to prepare a high-quality clarifying lecture.

Another key component of interteaching consists of small, frequent probes (i.e., quizzes or exams to assess mastery of material), which are typical of most behavioral teaching methods. These probes are modeled after corresponding prep guide questions and the assigned reading. According to Saville, Lambert, et al. (2011), this frequent probing is beneficial for the following reasons: (a) students have frequent opportunity to demonstrate what they have learned, (b) overall course grades are not greatly affected by low performance on a particular probe, and (c) frequent testing may capitalize on the testing effect and long-term retention of information.

A final component of interteaching consists of quality points, considered an explicit cooperative contingency and intended to promote high-quality in-class discussions, wherein students earn additional points (e.g., 8%–10% of their final course grade) on test probes if they, as a discussion group, score at or above a predetermined score. The immediacy of the delivery of quality points as feedback has been determined to be an important factor in promoting student learning (Rosales, Soldner, & Crimando, 2014). To maximize the immediacy of quality point delivery, instructors can provide individual students with an answer key immediately upon submission of each probe. On receipt of the answer key, students have immediate information on their own performance and also the opportunity to meet with their discussion partner(s) to determine if the contingency for that respective probe was met.

Comparison of Interteaching to Past Teaching Methods

Interteaching resulted from strengths and limitations of past teaching methods. Similar to

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RPT, interteaching revives the impact of peer discussion; however, it differs in terms of who directs class preparation before actual class time. Instructors that follow an interteaching format construct prep guides for the following class meeting based on enumerated course objectives and assigned readings stated in the syllabus, and distribute these guides at least 1 week before they are due. This systematic preassignment of lessons characteristic of interteaching is in contrast to the more flexible, homework-type, student-composed mock quizzes characteristic of RPT (Pigott et al., 1986). Prep guides provide more direction on the important components of assigned readings and help guide discussion. As stated in preceding text, they serve as study aids and operate as prompts to converse with a partner during the pair discussion.

Another feature that sets interteaching apart from other aforementioned methods is the pertinent role students assume in contributing to each short clarifying lecture the instructor facilitates at the beginning of class. A simple count of items on the prep guide that students find difficult, as reported on daily record sheets that are handed in to the instructor at the end of class, can improve course content for most instructors. PSI's usage of the written word (i.e., communication log between teacher and student; Keller, 1968) and RPT (Pigott et al., 1986) invest in two-way feedback similar to the record sheets used in interteaching.

On the basis of the rationale that frequent testing (i.e., testing effect) improves retention and skill mastery (Roediger & Karpicke, 2006), frequently delivered, regularly spaced probes or quizzes (i.e., usually five times per semester) have been modeled after prep guide questions in interteaching sessions. Akin to cooperative learning (Johnson & Johnson, 1975), a social component added to the interteaching set-up also gives students the opportunity to rate the quality of their knowledge acquisition and mastery via pair discussions.

Empirical Support for Interteaching

To date, a growing number of academic institutions both locally and internationally (e.g., in Canada and Norway) have adapted and incorporated the interteaching methodology into curricula across academic levels with positive results. For this review, a compilation of manually selected peer-reviewed empirical articles from a variety of scholarly journals relating to interteaching were comprehensively content-analyzed, as summarized in greater detail in Table 1.

Method

We conducted searches of the following academic databases: PsycINFO, EBSCO, and Google Scholar. Keyword search terms that were entered individually into each of these databases include *teaching methods*, *interteaching*, *college instruction*, and *academic performance*. The search of PsycINFO yielded the greatest number of results compared to the EBSCO and Google Scholar databases. We then conducted ancestry searches by examining the reference lists of identified studies for other possible articles. Only studies published in academic, peer-reviewed journals were included in this review. Dissertations, theses, and descriptive articles were excluded. Articles were included regardless of the year of publication. It was required that each article was published in English, empirically investigated interteaching either in a laboratory or classroom setting, employed either an experimental or correlational research design, and reported objective empirical data.

The first author and a second rater independently reviewed each of the 25 articles selected for inclusion in the review, evaluating each of the following criteria: (a) participants (chronological age, sex, graduate or undergraduate status, number), (b) setting (laboratory or classroom), (c) experimental design, (d) dependent variables (specific outcomes and outcome variables that were assessed or compared), (e) academic discipline, and (f) social validity (i.e., whether this was assessed). There was 100% agreement across all criteria. A summary of these criteria is presented in Table 1.

Efficacy of Interteaching

On the basis of preliminary and secondary reviews of empirical journal articles relating to interteaching (see Table 1), there is evidence that this method of instruction significantly contributes to several variables of student success in the classroom when compared with a traditional setup (e.g., lecture). A series of studies have concluded that interteaching increases stu-

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Table 1
Empirical Research Articles Demonstrating the Impact of Interteaching on Instruction

Author (Year)	Purpose	Participants	Setting	Experimental design	Dependent variable/s	Discipline (UG/G)	Social validity
Arntzen & Hoium (2010)	Compare effects of IT with traditional lecture	69 undergraduate (UG) students (*N* women = 46, *N* men = 23; *M* age = 30)	Class duration not specified; 2 sections, Akershus University College, Norway	Pretest-posttest	High, med, or low self-ratings on knowledge acquisition & maintenance (9–11 questions in each area)	Social Welfare (UG)	Yes
Cannella-Malone, Axe, & Parker (2009)	Compare effects of answering versus generating study guide questions on quiz performance during IT sessions	7 UG female students (age range = 20–22)	8 weeks (wk.) out of a 10-wk, 138-min class, Ohio State University, OH (OSU)	Alternating treatments design (ATD), random assignment to study guide assignments	*M* percent correct on eight 12-pt. weekly quizzes comprised of 2 each of MC, fill-in-the-blank, short answer, and interpretive problem solving questions; 8-item social validity questionnaire	Psychology—Research Methods (UG)	Yes
Emurian & Zheng (2010)	Demonstrate influence of individualized instruction and IT in a mid-level computer programming course	16 UG students (*N* men = 12, *M* age = 22.3; *N* women = 4, *M* age = 20)	14-wk semester, 2.5-hrs per week University of Maryland, Baltimore County, MD (UMBC)	Pretest-posttest control; correlations (nonparametric, for data analysis)	Quiz scores on 12 MC rule questions	Information Technology –Computer Programming (UG)	No
Felderman (2014)	Compare frequency effects of exam delivery on overall exam scores in an introductory psychology course	52 UG students (*N* men = 15, *N* women = 37)	50-min class met 3x/wk for 16 wks, w/SEC 2 meeting 6 more days for 6 more exams (total = 12) compared to SEC 1 (total = 6), Bismarck State College, ND	Nonequivalent groups design (NEGD)	40-pt. pretest, 6 40-pt. unit exams for SEC 1 and 12 20-pt. unit exams for SEC 2, and a 40-pt. cumulative final exam comprising true-or-false, short answer, and MC questions	Psychology –Introductory (UG)	No

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Table 1 (*continued*)

Author (Year)	Purpose	Participants	Setting	Experimental design	Dependent variable/s	Discipline (UG/G)	Social validity
Filipiak, Rehfeldt, Heal, & Baker (2010)	Compare effects of IT w/ and w/out points for prep guide completion and lecture alone	23 UG students	2.5-hr class met 1 time per wk. 14 weeks, Southern Illinois University Carbondale, IL (SIUC)	Multi-element design, randomly assigned single-subject ATD	*M* percentage of pts. & average individual scores on 12 timed 11–18 item quizzes containing short answer, MC, matching, fill-in-the-blank, and story problem questions; # of prep guides completed; 11-item social validity questionnaire to assess student satisfaction & attendance	Psychology—Research Methods (UG)	Yes
Goto & Schneider (2009)	Application of IT to facilitate higher-ordered comprehension of material in a nutrition course	54 UG students	13 or 8 IT sessions depending on class section, California State U., Chico, CA (CSU-C)	Post-test only control	Evaluation survey with open-ended questions relating to perception of IT's effects on learning outcomes	Nutrition (UG)	Yes
Goto & Schneider (2010)	Replicate previous study to incorporate a modified learner-centered IT method into an UG nutrition course	32 UG students	13, 30-min IT sessions (excluding exam week), CSU-C	Post-test only control	Quantitative evaluation survey with questions relating to perceived learning outcomes, IT as a pedagogical method, and overall commitment to IT	Nutrition (UG)	Yes

(*table continues*)

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Table 1 (*continued*)

Author (Year)	Purpose	Participants	Setting	Experimental design	Dependent variable/s	Discipline (UG/G)	Social validity
Lambert & Saville (2012)	Examine testing effects of brief post-pair discussion quizzes vs. anagrams and determine their contributions to the efficacy of IT	117 UG students (*N* women = 84, *N* men = 33; *M* age = 19)	Controlled lab setting (random assignment to one of two groups: a) quiz condition, or b) no-quiz (anagram) condition), James Madison University, VA (JMU)	Post-test only control	16-item MC quiz, items tailored from short-answer questions in brief post-pair discussion quizzes and prep guides	N/A (UG)	No
Mason (2012)	Empirical validation of IT's positive effects on active student responding and teacher behavior, in comparison to traditional lecture	24 grad students (*N* women = 16, *N* men = 8; age range = 25–55)	2.5-hr class sessions once a week with an hour either devoted purely to lecture or a combination of lecture and IT University of Texas San Antonio, TX (UTSA)	Single-subject ABABA reversal design	Student self-reports on their level of active responding during lecture and/or IT; frequency count of instructor-presented slides	Special Education (G)	Yes
Rehfeldt, Walker, Garcia, Lovett, & Filipiak (2010)	Replicate previous study to evaluate effects of pts. vs. no pts. for prep guide completion and subsequent quiz performance	31 grad students (*N* women = 26, *N* men = 4)	3-hr class, students randomly divided into 2 groups with pre-ordered alternating pts. vs. no-pts. conditions: maroon (*N* = 15), silver (*N* = 15), SIUC	2 single-subject ATD implemented simultaneously	10-pt. instructor-led HW assignments that included 5–10 short-answer or essay questions; 15-pt. teacher-formulated quizzes that included 4–10 short-answer or essay questions (content different from HW); student satisfaction questionnaire	Behavior Analysis (G) – Behavioral Assessment and Observation Methods	Yes

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Table 1 (*continued*)

Author (Year)	Purpose	Participants	Setting	Experimental design	Dependent variable/s	Discipline (UG/G)	Social validity
Rosales, Soldner, & Crimando (2014)	Evaluate the impact of quality points on interteaching and enhance the immediacy of delivery of quality points	11 UG students (*N* men = 1, *N* women = 10; *M* age = 21)	75-min class sessions twice per week, 16-wk semester, Assumption College, MA	Single-subject ATD, conditions alternated quasi-randomly	Average performance on 10-pt. multiple choice, short answer, and fill-in-the-blank weekly quizzes	Psychology—Learning/Behavior Analysis (UG)	No
Saville et al. (2014)	Compare IT to lecture and student's long-term recognition memory over a longer period of time	134 UG students (*N* women = 109, *N* men = 25)	Class duration not specified, JMU	Random assignment of students to IT, lecture, and post-test only control	10-pt. MC quiz	Psychology—Introductory (UG)	No
Saville, Zinn, & Elliot (2005)	Examine effects of IT compared to traditional teaching methods in a controlled lab setting	84 UG students	Controlled lab setting (random assignment to 1 of 4 conditions: IT; lecture; reading; or control), JMU	Posttest only control	10-pt. MC quiz	N/A (UG)	No
Saville, Zinn, Neef, Van Norman, & Ferreri (2006)	Investigate similarities & differences in quiz & cumulative final test scores between IT & traditional college lecture	Study 1: 35 grad students; Study 2: 31 junior & senior UG students (*N* men = 5, *N* women = 26, *M* age = 21)	Study 1: 135-min, 8-wk grad class, JMU; Study 2: 75-min bi-weekly or 50-min tri-weekly UG class, OSU	Study 1: pre-posttest control; Single-subject ATD; Study 2: Single-subject ATD	6-pt. short-answer quizzes and 40-pt cumulative final test scores	Special Ed, Psychology, Physical Education (G); Psychology—Research Methods (UG)	No

(*table continues*)

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Table 1 (*continued*)

Author (Year)	Purpose	Participants	Setting	Experimental design	Dependent variable/s	Discipline (UG/G)	Social validity
Saville & Zinn (2009)	Evaluate impact of quality points on effectiveness of IT	44 UG students (*N* men = 16, *N* women = 28, *M* age = 18)	2 sections of UG Gen Psychology course, Section 1 met twice/wk. for 75 min, Section 2 met thrice/wk. for 50 min, JMU	Single-subject ATD	25-pt. exam with two 5-pt. essay questions and other objective fill-in-the-blank or short answer questions	Psychology—Introductory (UG)	No
Saville, Cox, O'Brien, & Vanderveldt (2011)	Component analysis to evaluate impact of clarifying lectures on efficacy of IT	46 UG students (*M* age = 20; *N* men = 10, *N* women = 36)	3 sections of UG Psychology class, JMU	Single-subject ATD	Scores in five 30-pt. exams, consisting three 5-pt. essay questions and other objective questions	Psychology—Research Methods (UG)	No
Saville, Pope, Lovaas, & Williams (2012)	Systematically replicate Lambert & Saville (2012) in a natural classroom setup, and re-examine benefits of post-discussion quizzes on learning by considering latency between discussion and lecture	58 junior & senior UG students (SEC1: *N* = 29, *N* men = 8, *N* women = 21; SEC 2: *N* = 29, *N* men = 5, *N* women = 24)	2 sections met biweekly 75 min.; sessions counterbalanced for post-discussion quiz at end or beginning of each class, JMU	Single-subject ATD	Participation pts. upon completion of assigned prep guide; nine 3-pt. MC post-pair discussion quizzes based on prep guide questions (not part of final cumulative course grade); six 45-pt. exams consisting of 18–22 short-answer, MC, & fill-in-the-blank items	Psychology—Learning/Behavior Analysis (UG)	No

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Table 1 (*continued*)

Author (Year)	Purpose	Participants	Setting	Experimental design	Dependent variable/s	Discipline (UG/G)	Social validity
Saville, Pope, Truelove, & Williams (2012)	Determine if GPA (low, moderate, high) has an impact on effectiveness of IT when compared to lecture	73 junior and senior UG students (*N* men = 19, *N* women = 54, *M* age not specified)	Tri-weekly 50-min classes, 3 self-reported GPA groups: a) low (M = 2.86) b) moderate (M = 3.22), c) high (M = 3.67); all subjected to lecture and IT conditions, JMU	Single-subject ATD	Six 50-pt. exams with 20 short-answer or fill-in-the-black items each, following both lecture and IT conditions	Psychology—Psychology of Learning (UG)	No
Scoboria (2007)	Application of IT in a large section of an UG course	3rd year UG students (No. not determined)	1 UG 80-min class (twice a wk.), University of Windsor, Ontario	Correlational	N/A (correlational)	Psychology—Abnormal (UG)	N/A
Scoboria & Pascual-Leone (2009)	Application of IT in two sections of an UG course	68 UG students from the first section & 47 UG students from second section (gender & age not specified)	13-wk course (1st section met twice per wk. for 80 min, 2nd section met once a week for 3 hrs. each), University of Windsor, Ontario	2 single-subject ATD implemented simultaneously	No. of discussion sessions attended out of 10 (i.e., record forms); 3 exam grades (with MC & fill-in-the-blank questions), 4- to 6-pt. written assignments (clinical case paper & self-reflection paper); preference for IT vs. lecture questionnaire; 9-pt motivation questionnaire (2nd section only)	Psychology—Abnormal (UG)	Yes

(*table continues*)

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Table 1 (*continued*)

Author (Year)	Purpose	Participants	Setting	Experimental design	Dependent variable/s	Discipline (UG/G)	Social validity
Slagter & Scribner (2014)	Application of IT to increase student engagement given 5 classroom scenarios	120 UG students in five different courses; (gender & age not specified)	5 IT sessions per sem. for 5 Political Science courses (i.e., introductory to upper-division seminars), University of Wisconsin Oshkosh, WI (UWOSH)	Post-test only control	IT valuation survey (no. of items not specified)	Political Science (UG) – Comparative Politics, International Relations, European Union Politics, Women in Politics	Yes
Truelove, Saville, & Van Patten (2013)	Examine effects of discussion group size on student performance	61 UG students (Sec. 1 with 30 students/ large grp. (4 persons/ discussion): *N* women = 25, *N* men = 5; 2nd section with 31/small grp. (2pax/disc.: *N* women = 28, *N* men = 3)	Each section met twice a week for 1.25 hrs. each, JMU	Post-test only control	Six 45-pt. unit exams, a 90-pt. cumulative final exam, and total pts. earned throughout the semester	Psychology—Learning/ Behavior Analysis (UG)	No
Tsui (2010)	Application of IT strategies to present its advantages for student learning & attendance in UG Sociology classes	25–30 UG students	Not specified	Post-test only control	Five to six 20- to 30-min quizzes; evaluative questionnaire	Sociology (UG) – Sociology of Marriage OR Introduction to Sociology	Yes

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Table 1 (*continued*)

Author (Year)	Purpose	Participants	Setting	Experimental design	Dependent variable/s	Discipline (UG/G)	Social validity
Zayac & Paulk (2014)	Compare effects of IT to traditional lecture on student exam scores	21 non-freshmen UG students (*N* women = 14, *N* men = 7; median age = 20)	2 non-concurrent sections attended 85-min class sessions that met 4 times weekly in a 6-wk summer course, University of North Alabama, AL (UNA)	Multi-crossover, counterbalanced design; single-subject ATD	4 100-pt. exams (2 following IT and another 2 following traditional lecture) comprising MC and essay questions; 6-item questionnaire to assess student preference for instructional format	Psychology—Learning/Behavior Analysis (UG)	Yes

Note. IT = interteaching; UG = undergraduate; G = graduate; ATD = alternating treatments design; MC = multiple choice; NEGD = nonequivalent groups design; SEC = section; HW = homework; GPA = grade point average.

dent academic performance when directly compared with traditional lecture (Arntzen & Hoium, 2010; Saville, Zinn, & Elliot, 2005; Saville et al., 2006).

In particular, instructors who have integrated interteaching techniques have consistently reported high academic achievement by students in the form of homework, participation (Filipiak et al., 2010; Rehfeldt et al., 2010; Saville, Pope, Truelove, & Williams, 2012), probe (i.e., quiz) grades (Arntzen & Hoium, 2010; Cannella-Malone, Axe, & Parker, 2009; Emurian & Zheng, 2010; Filipiak et al., 2010; Lambert & Saville, 2012; Rehfeldt et al., 2010; Saville et al., 2012; Saville et al., 2005; Saville et al., 2006; Scoboria & Pascual-Leone, 2009; Tsui, 2010), end-of-the-semester exam scores (Saville, Cox, O'Brien, & Vanderveldt, 2011; Saville, Pope, Truelove, & Williams, 2012; Saville, Pope, Lovaas, & Williams, 2012; Saville & Zinn, 2009; Saville, Zinn, Neef, Van Norman, & Ferreri, 2006), and long-term recognition memory (Saville et al., 2014).

Academic Disciplines

The overall efficacy of interteaching has been demonstrated across a variety of disciplines, including computer programming (Emurian & Zheng, 2010); political science (Slagter & Scribner, 2014); special education (Mason, 2012; Saville et al., 2006); nutrition (Goto & Schneider, 2009; Goto & Schneider, 2010); social welfare (Arntzen & Hoium, 2010); sociology (Tsui, 2010); and several psychology courses, including introductory (Felderman, 2014; Saville & Zinn, 2009), abnormal (Scoboria, 2007; Scoboria & Pascual-Leone, 2009), research methods (Cannella-Malone et al., 2009; Filipiak et al., 2010; Saville, Cox, et al., 2011; Saville, Zinn, Lawrence, Barron, & Andre, 2008; Saville et al., 2006), and behavior analysis (Rehfeldt, Walker, Garcia, Lovett, & Filipiak, 2010; Saville, Pope, Lovaas, & Williams, 2012; Scoboria et al., 2009; Zayac & Paulk, 2014).

Class Size

Apart from the successes of interteaching in an assortment of academic disciplines, class sizes have also varied in the extant interteaching literature. Specifically, interteaching has been reported in small class sizes with 30 students or

fewer (Cannella-Malone et al., 2009; Emurian & Zheng, 2010; Filipiak et al., 2010; Mason, 2012; Tsui, 2010; Zayac & Paulk, 2014); moderate class sizes ranging from 31 to 75 students (Arntzen & Hoium, 2010; Felderman, 2014; Goto & Schneider, 2009; Goto & Schneider, 2010; Rehfeldt et al., 2010; Saville, Cox, et al., 2011; Saville, Pope, Lovaas, & Williams, 2012; Saville, Pope, Truelove, & Williams, 2012; Saville & Zinn, 2009; Saville et al., 2006; Scoboria & Pascual-Leone, 2009; Slagter & Scribner, 2014); and large class sizes, ranging from 76 to 117 students (Lambert & Saville, 2012; Saville et al., 2005). However, no research to date has investigated whether class size or meeting times result in any differences in the effectiveness of interteaching.

Class Meeting Times

According to Boyce and Hineline (2002), an ideal class schedule for interteaching is three 50-min interteaching sessions amounting to 150 mins per week. This general schedule has been empirically demonstrated in a series of studies (Saville, Pope, Lovaas, & Williams, 2012; Saville & Zinn, 2009; Saville et al., 2006). Other researchers, however, have demonstrated success using the recommended 150 mins when classes are held only once (Emurian & Zheng, 2010; Filipiak, Rehfeldt, Heal, & Baker, 2010; Mason, 2012) or twice per week (Saville, Cox, et al., 2011; Saville & Zinn, 2009; Saville et al., 2006; Truelove, Saville, & Van Patten, 2013). Furthermore, some researchers have incorporated interteaching into classes that are held for as little as 30 mins (Goto & Schneider, 2010) to 135 mins (Saville et al., 2006) and those held for as long as approximately 150 mins (Scoboria, 2007; Scoboria & Pascual-Leone, 2009) to roughly 180 mins (Rehfeldt, Walker, Garcia, Lovett, & Filipiak, 2010; Scoboria & Pascual-Leone, 2009; Zayac & Paulk, 2014).

Boyce and Hineline (2002) also recommend that each section of the class be divided in the following manner: one quarter of class time spent on clarifying lecture and the rest of class time devoted to pair discussion, including review of prep guide questions, answering of probes (i.e., quizzes), and completion of record sheets. A number of studies have reported success with interteaching formats using different time allocations for each component, depending on student need and mastery of course content and instructor's teaching style. For example, Goto and Schneider (2010) led a 30-min, class with 20 mins devoted to a pair discussion and 10 mins assigned to thought-provoking synthesis questions via the record and peer assessment form.

Setting

Similar to the variability observed in interteaching class meeting times (i.e., frequency and duration), Table 1 portrays a wide range of public and private colleges and universities both nationwide and abroad that have used interteaching with their undergraduate and graduate students. Universities across 11 states have used interteaching: Ohio (Cannella-Malone et al., 2009; Saville et al., 2006), Maryland (Emurian & Zheng, 2010), North Dakota (Felderman, 2014), Illinois (Filipiak et al., 2010; Rehfeldt et al., 2010), California (Goto & Schneider, 2009; Goto & Schneider, 2010), Virginia (Lambert & Saville, 2012; Saville et al., 2014; Saville et al., 2005; Saville et al., 2009; Saville, Cox, et al., 2011; Saville, Pope, Lovaas, & Williams, 2012; Saville, Pope, Truelove, & Williams, 2012; Truelove et al., 2013), Texas (Mason, 2012), Massachusetts (Rosales et al., 2014), Wisconsin (Slagter & Scribner, 2014), and Alabama (Zayac & Paulk, 2014). Universities outside of the United States have adapted interteaching to social welfare classes (Keller, Norway; Arntzen & Hoium, 2010) and to abnormal psychology classes (Windsor, Ontario, Canada; Scoboria, 2007; Scoboria & Pascual-Leone, 2009).

Experimental Design

Out of the 25 peer-reviewed empirical journal articles listed in Table 1, only one was a two-part study that used both pretest-posttest and alternating treatments design in its implementation of interteaching (Saville et al., 2006). Of the remaining 24, 11 used an alternating treatments design, making this design the most widely used in the study of interteaching (Cannella-Malone et al., 2009; Filipiak et al., 2010; Rehfeldt et al., 2010; Rosales et al., 2014; Saville et al., 2009; Saville, Cox, et al., 2011; Saville, Pope, Lovaas, & Williams, 2012; Saville, Pope, Truelove, & Williams, 2012; Scoboria & Pascual-Leone, 2009; Zayac & Paulk, 2014); eight used posttest only (Goto & Schneider, 2009; Goto & Schneider,

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2010; Lambert & Saville, 2012; Saville et al., 2014; Saville et al., 2005; Slagter & Scribner, 2014; Truelove et al., 2013; Tsui, 2010); two applied pretest−posttest (Arntzen & Hoium, 2010; Emurian & Zheng, 2010); and three others separately used a nonequivalent groups design (Felderman, 2014), a single-subject ABABA reversal design (Mason, 2012), and a correlational design (Scoboria, 2007).

Social Validity Measures

It is notable that the majority of studies that have collected social validity data have also reported student preference for interteaching when compared with traditional lecture (Arntzen & Hoium, 2010; Cannella-Malone et al., 2009; Filipiak et al., 2010; Goto & Schneider, 2009; Goto & Schneider, 2010; Rehfeldt et al., 2010; Saville et al., 2008; Saville et al., 2006; Scoboria & Pascual-Leone, 2009; Slagter & Scribner, 2014). However, Zayac and Paulk (2014) reported otherwise, with its 21 students of behavior analysis preferring traditional lecture to interteaching.

Component Analyses

As mentioned previously, the various components of interteaching have positively impacted its success in the classroom. In more recent years, attempts to identify the relative impact of each component of interteaching have been conducted. These contributions are discussed in subsequent paragraphs.

Quality Points

Saville and Zinn (2009) systematically evaluated the impact of quality points in two sections of a general psychology class with 44 undergraduate students. During pair discussions, students selected their own partners but were instructed to select a different partner for each discussion (they could only work with the same partner three times throughout the semester). All other components of interteaching, as described previously, were in place. The quality point contingency was counterbalanced across the two sections, whereby both students in a dyad were required to correctly and sufficiently respond to an essay question worth four or five points to receive an additional three quality points toward their final course grade. If either student responded to the question incorrectly, both lost this privilege. Quality points accounted for 8% of the final course grade. No statistically significant differences between the two sections were noted.

More recently, Rosales, Soldner, and Crimando (2014) further evaluated the impact of a quality points component of interteaching by enhancing the immediacy of feedback provided to students on this contingency. Feedback was provided to students via delivery of an answer key upon submission of postdiscussion quizzes with the opportunity to review the answer key with their interteaching partner during class. A total of 11 undergraduate students in an introduction to applied behavior analysis course served as participants. An alternating treatments design was used to compare student performance on postdiscussion quizzes during two conditions—quality points versus no quality points—with all other components of interteaching in effect. Results indicated average quiz performance was higher following class sessions with the quality points contingency.

Clarifying Lecture

Saville, Cox, et al. (2011) examined another interteaching component, namely the clarifying lecture, with three sections of an undergraduate research methods course exposed to the following conditions: (a) delayed 20- to 30-min lecture (2 to 5 days after submission of record sheets), (b) immediate lecture (approximately 5 mins after), and (c) control (no lecture after). All other components of interteaching were in effect throughout the semester. All sections were required to take five 30-point exams during the semester. Results indicated students in the delayed-lecture condition (M = 85%) had significantly higher exam scores ($p < .001$, $d = 1.61$) than did students in the control condition (M = 71%) on the first exam, but were not significantly different ($p = .10$) from the immediate-lecture condition (M = 78%). Results from the third exam showed that both delayed- (M = 88%) and immediate-lecture conditions (M = 89%; i.e., not significantly different from each other in terms of grading, $p = .99$) positively influenced exam grades (ps = .006

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and .004, respectively; *ds* = 1.31 and 1.20, respectively) more than the control condition (p = .99). However, no statistically significant differences were shown for the rest of the exams (ps > .25).

Discussion Group Size and Prep Guides

Truelove, Saville, and Van Patten (2013) were the first to systematically examine whether discussion group size affects student performance in an interteaching-based course. In that study, the authors manipulated discussion group size (smaller groups of two students vs. larger groups of four students) across two sections of an undergraduate psychology course. Results from the study found no significant differences between the two sections on six unit exams, among scores on a cumulative final exam, and in the total number of points earned across the semester. In conclusion, the authors highlighted that although discussion group size did not affect student performance, if future research should determine that discussions (small or large) are an important component of interteaching, instructors are suggested to consider student preference when deciding whether to use small or large groups.

In a related study, Scoboria and Pascual-Leone (2009) altered but did not statistically analyze the impact of discussion group size (a larger group size of three to four students per group instead of a smaller group size of two) on student academic performance with prep guides. Similarly, because Goto and Schneider (2010) did not produce any systematic data on their study, results pertaining to the effect of discussion group size on academic performance were inconclusive. However, Goto and Schneider (2010) reported the social validity of increasing discussion group size. Results from a questionnaire given to students indicated preference for working in larger groups as opposed to smaller ones. Each student was initially assigned to complete one set of questions, and then given the opportunity to discuss responses with a peer during class time. This pair of students then taught the material they had just reviewed to a second pair of students. The second pair of students, in turn, taught material from a different set of questions they had discussed. Finally, all students worked on an additional prep guide focused on synthesis questions for each assigned topic.

Test Probes

In an attempt to spearhead research on the test probe component of interteaching, Felderman (2014) conducted an experiment with 52 undergraduate introductory psychology students. All students were given pretests and posttests (i.e., a cumulative final exam). In between the pretest and posttest conditions, the author administered different values for the independent variable. Half of the students were required to take six unit exams throughout the whole semester, whereas the other half were provided 12 unit exams. The author highlighted the importance of testing for mastery and fluency, and found that frequent testing might lead to higher test scores and better retention of course material. Furthermore, the author concluded that both the frequency of test delivery and unit exam results throughout the semester were directly proportional to the students' final exam grades, meaning that the more tests were given to the students per semester, the higher their grades were throughout the semester and toward the end of the grading period.

Recommendations for Pedagogy Resulting From Interteaching Research

On the basis of the authors' personal experiences implementing interteaching in the college classroom, and the empirical data reviewed in this article, we offer the following recommendations to instructors about interteaching. Given the paucity of research on interteaching, these recommendations should be taken with an eye toward conducting additional investigations on this topic in order to add to the existing literature.

1. One of the more difficult aspects of implementing interteaching for the first time is the amount of upfront work required of instructors as they prepare materials for a course. In particular, a great deal of time and effort are needed to develop high-quality prep guides for an individual course and class. Although no studies to

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date have evaluated the direct impact of this component, all of the experimental studies included in this review incorporated the prep guide component of interteaching. Therefore, it seems the use of prep guides is an essential component that should not be excluded when interteaching is implemented in the classroom.

2. On the other hand, the impact of quality points is still debatable. Two of the studies we reviewed directly evaluated the effect of quality points when all other components of interteaching were in place (Rosales et al., 2014; Saville & Zinn, 2009). Instructors concerned about the time and logistics involved in the delivery and assessment of quality points may opt to omit this component. Alternatively, instructors that choose to include the quality points component of interteaching are encouraged to continually work to enhance the effective delivery and use of quality points as an explicit cooperative contingency to positively impact student learning and satisfaction.
3. To begin creating prep guide questions and to account for the time and effort needed to initially develop prep guides, instructors may ask students to write their own discussion questions in exchange for points. At least one previous study evaluated the impact of asking students to write their own questions rather than using questions posed directly by the instructor to create prep guides (Cannella-Malone et al., 2009). To promote "good" question writing, point values may be related to the quality of the question or questions (i.e., more points for well-written and thoughtful questions).
4. Some instructors may be concerned about the number of students in a classroom and the teacher's ability to traverse the room to interact with each pair of students during interteach sessions. At least one published study has shown no significant differences when larger groups (i.e., four students per group) were formed for the in-class discussions (Truelove et al., 2013). Therefore, instructors should not permit class size to prevent them from implementing interteaching in the classroom, and may opt to create larger groups to increase the likelihood of having an opportunity to interact with all students during class time. Additionally, using a competent teaching assistant to facilitate discussion during interteach sessions can also help in covering large classrooms.
5. Finally, instructors may opt to implement interteaching during only a portion of the class meetings over the course of a semester. This may be planned ahead of time, or may occur intermittently based on student feedback on a specific topic. For example, if students show interest on any given topic, the instructor may opt to hold a larger class discussion as opposed to pair discussion. In our own experiences, we have often seen students begin to interact with one another during interteach sessions if a topic is of particular interest or presents a challenge. This sort of community within the classroom, especially with online courses, may be a result of "forced" interaction with classmates.

Recommendations for Future Interteaching Research

As noted previously, there are several directions for investigators to pursue given the paucity of research in this area. In subsequent text, we have enumerated some of the major areas that we think would benefit from additional research.

1. First, there is a need for direct and systematic replications of the studies conducted to date. Both laboratory- and application-based demonstrations in classroom and work training settings would advance what we already know about the benefits of interteaching. Systematic replications in different subject areas and in different modes of classroom delivery (online, face-to-face, or blended) will enhance the generality of interteaching research and practice. Applications and evaluations with a diverse student body (different age groups, ethnicities, and in varying academic institutions such as community colleges) are also needed.
2. Future interteaching research may opt to employ more individualized techniques. Some researchers have proposed adjust-

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ing the length of the clarifying lecture (Goto & Schneider, 2010; Scoboria, 2007). As mentioned previously, variations in the manner in which interteach sessions are arranged should also be investigated given the rise of online education in recent years (Moore & Kearsley, 2012). For example, many Web-based learning systems, such as Blackboard Collaborate, Adobe Connect, and Wimba, allow an instructor to use online breakout rooms to help facilitate the pair discussion component of interteaching in either synchronous or asynchronous online or blended courses. Online instructors can determine in advance the number of learners in each breakout room and can check in with each room during online class meetings, similar to how an instructor would traverse the room in a traditional classroom. This is especially significant given the varied demographics of many online courses (i.e., domestic and international students from varied geographical and cultural backgrounds). Considering the scarcity of published interteaching research in online education to date, this particular area of interteaching research is sorely needed.

3. The majority of studies included in this review used quiz or exam results as the primary dependent variable. Future research should expand upon the existing studies by evaluating the impact of interteaching on other measures of class performance, such as overall class participation, fluency (as opposed to acquisition alone) of the material learned, and generalization, maintenance, and application of learning outcomes. For example, following mastery of content on a quiz or exam, students could be asked to practice application of the material learned in a role-play situation. This type of evaluation would only be applicable with specific courses or in certain disciplines (e.g., nursing, counseling, behavior analysis). In addition, further investigation of learners' preferences and degrees of satisfaction with variations of interteaching methods when used in combinations with other methods of instruction (e.g., lecture, problem-based learning) are necessary.
4. Future interteaching research must also be conducted with populations of learners outside of traditional academic and classroom environments (e.g., undergraduate psychology students), such as preprofessional and professional educational and human service workers in real-world settings. For example, the interteaching methodology could be used in work training environments to provide employee in-service or ongoing personnel preparation. These training environments could be traditional face-to-face settings or online learning environments. The use of interteaching in online training could help to reach a larger number of learners, especially learners with a disability or living in remote areas. As a result, the promotion of interteaching as a user-friendly and effective evidence-based behavioral teaching method may be fully demonstrated and accessed across a broader spectrum of teaching and learning environments.
5. With respect to component analyses, additional research is needed to determine which component(s), in particular, have the greatest impact on educational outcomes. To date, only a small number of these studies have been conducted. These studies should be replicated with the most robust manipulation to determine the impact of each component (i.e., complete lack of a particular component in specified conditions to minimize the role of extraneous variables). Goto and Schneider (2010) and Scoboria and Pascual-Leone (2009) investigated the quality and frequency of pair or quad discussions and the importance of the interteach report. These two groups of researchers may influence further examination in this area to determine the impact of interteaching on effective learning and satisfaction among students.

In sum, interteaching has been presented as a scientifically sound, evidence-based teaching and learning method with promising ap-

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plication across varied populations and educational settings, not only effective in improving student academic outcomes, but also in garnering student interest in the teaching and learning process (Dunn et al., 2013; Saville, Cox, et al., 2011). Instructors are encouraged to consider adapting some of the tools used in interteaching to enhance their own teaching. As a result, the application of evidence-based teaching methods is likely to have a positive impact on student learning and satisfaction.

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