

Developments in Research-Based Instructional Strategies: Learning-Centered Approaches for Accounting Education

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Abstract

This paper synthesizes research-based instructional strategies in accounting education, providing an important resource of learning-centered educational approaches from recent studies. Eleven articles published in 2019 from five accounting education journals are summarized. Categorized according to Marzano's research-based instructional strategies framework for effective instruction, these articles provide empirically-based studies on instructional design, organized as a thematic-bibliography. Research-based instructional strategies (RBIS) provide educators with learning-centered educational approaches and demonstrated student learning efficacy through evidence-based conclusions. Trends in the literature highlight the positive learning outcomes associated with strategies that create an active learning environment. Studies published in 2019 include an analysis of group and team-based learning, structured student assessment, class-participation tracking tools, game-based learning, and the use of instructor-generated videos. These findings provide evidence-based pedagogical approaches to improve instruction and learning outcomes, potentially reducing the trial-and-error method of testing a strategy's effectiveness.

Key words: *Research-based instructional strategies; accounting education research; research summaries; classroom research.*

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Introduction

This paper offers summaries from research-based instructional strategies published in 2019, providing a beneficial review of the literature and promoting the dissemination and implementation of tested instructional strategies. Research-based strategies address the call for an experimental approach in educational research to 'induce a meaningful improvement in learning outcomes.' (Apostolou, Dorminey, and Hassell 2020 p. 19). Using evidence-based conclusions potentially reduces the trial and error approach of testing a strategy only to find a lack of effectiveness in achieving the desired learning outcome. Eleven articles published in 2019 from five accounting education journals are summarized as a thematic-bibliography, concentrating on key findings from a diverse range of research, and creating a useful resource for the academy. Articles reviewed contain an objectively measured and verified research design, providing evidence of the strategy's effectiveness on learning (Apostolou, Dorminey, and Hassell 2020).

According to Apostolou et al. (2020), 'For the academy to advance in the area of education, we must know what factors, delivery modes, and pedagogical innovations induce a meaningful improvement in learning outcomes' (p. 19). Descriptive and other nonempirical educational research, while contributing important resources for educators, is often subjective and anecdotal, based on student satisfaction surveys. Yet recent studies point to a decline in empirical research in accounting education (Rebele and St. Pierre 2015; Apostolou, Dorminey, and Hassell 2020), notwithstanding the call for continued discussion in the accounting academy about the importance of educational scholarship (Sangster, Fogarty, Stoner, and Marriott 2015). To date, no articles present summaries of current research-based articles containing tested instructional strategies designed to increase student outcomes.

Research-based Instructional Strategies

A research-based instructional strategy is any teaching approach supported by a statistical analysis of data from the learning environment (Apostolou, Dorminey & Hassell 2020). Such research requires a substantial experimental design effort to objectively analyze a strategy's effectiveness. The use of research-based, high-impact teaching innovations increases the probability of strong student outcomes. Using pretest/post-test assessment reduces student survey biases on learning advancement. Implementation in more than one class section, for more than one semester, at different universities, and at varying levels of instruction (i.e., principles of accounting versus intermediate) provides stronger research results.

Published RBIS offer faculty the opportunity to incorporate validated effective strategies into their curriculum without the potential issues associated with a trial and error approach to classroom design. Several studies on discipline-specific RBIS have been published (Zeilik, Bisard & Lee 2001; Chasteen & Pollock 2009; Foote, Neumeyer, Henderson, Dancey & Beichner 2014;). Beichner (2007) studies modifications to large undergraduate physics classes, using an active learning environment, building the curriculum reform on research-based pedagogy. Henderson and Dancy (2009) examine the knowledge and use of evidence-based educational research in physics, finding that 87% of faculty are knowledgeable of the concept of an RBIS while less than half (48%) actually use such studies in instruction. Similarly, Froyd et al. (2013) analyze the adoption of RBIS in engineering courses, finding that while faculty awareness and initial use is high, most faculty discontinue use due to student resistance, class consumption, preparation time, and a perceived lack of effectiveness.

To date, the accounting academy has not analyzed or examined the use of research-based instructional strategies, providing opportunities for expanded research

in accounting education. This literature review aims to examine existing RBIS within a framework design to aid instructional design.

Methodology

The education journals reviewed were selected from top rankings as follows: (1) *Accounting Education*, (2) *Advances in Accounting Education: Teaching and Curriculum Innovations*, (3) *Issues in Accounting Education*, (4) *Journal of Accounting Education* (5) *The Accounting Educators' Journal* (Bernardi & Collins 2019; Apostolou, Dorminey & Hassell 2020). Of the 81 articles published in these journals in 2019, eleven articles (14%) present research-based strategies. Table 1 summarizes the journals reviewed, listing total articles and total RBIS published.

Table 1:
Number of articles published and number of RBIS

Journal	Total Articles Published	Research-Based Instructional Strategies
Accounting Education	27	6
Advances in Accounting Education	10	1
Issues in Accounting Education	15	0
Journal of Accounting Education	22	2
The Accounting Educators' Journal	7	2
TOTAL	81	11

An analysis of RBIS provides a useful composite of research for the accounting educator, similar to a thematic-bibliography, found in Volkov's study in the area of VAIC™ (2012), and introduced as a new approach by editors Perrin and Laing (2012) in the *Journal of New Business Ideas & Trends*. Several articles review, classify, analyze, and annotate accounting education literature. Since 1986, a series of articles providing an annual examination of accounting education literature has been published (Apostolou, Dorminey & Hassell 2020). A series of articles in accounting regulation synthesizes and annotates research findings for practitioners, students, academics, and regulators (Moehrle, Meckfessel, Reynolds-Moehrle, Stuerke & Wen 2018). Chiu et al. (2019) provide an analysis of 681 articles in accounting information systems and emerging technologies. Paisey and Paisey (2004) provide an examination and review of accounting education research from the first ten volumes of *Accounting Education* to highlight the journal's diverse topics, strategies, and research methods. Apostolou et al. (2014) compile a 30-year summary of educational research in accounting information systems. To date, none present summaries of current research-based articles containing tested instructional strategies designed to increase student outcomes.

Marzano's Framework for Effective Instruction

Articles selected for this paper are from an analysis of instructional strategies and approaches for use in face-to-face, blended, or online courses. Categorized according to Marzano's instructional strategies framework for effective instruction, these summaries provide a guide to proven pedagogical innovations based on well-known instructional design theories. The nine-dimensional framework for instructional planning allows a functional method of categorizing RBIS according to intentional classroom design and proven practices. Cataloging RBIS within such a framework allows educators an ability to purposefully select strategies for specific classroom use.

Robert Marzano, working with the Mid-Continent Regional Educational Library and the Department of Education, produced a meta-analysis of instructional research (Marzano, 1998). Published for wider dissemination outside of academic settings,

Marzano, Pickering, and Pollock's 2001 book *Classroom Instruction that Works – Research-Based Strategies for Increasing Student Achievement* creates a research-based framework for instructional strategies, allowing educators to be more intentional in their instructional decisions, focusing on a learning-centered approach rather than one centered on teaching. Marzano's work, including over 50 books and 200 articles, is widely used as a model for effective teaching and the promotion of higher-order thinking.

While not yet adapted by accounting education, Marzano's compendium of instructional strategies is widely recognized in educational research (Moseley, Elliott, Gregson & Higgins 2005; Aphorp, Igel & Dean 2012; Toldeo & Dubas 2016; Wyman-Blackburn 2017; Cucuk, Siraz & Bay 2018). His view of teaching as part art and part science is based on rigorous research designed to produce strong student learning outcomes (Marzano, 2007). Marzano's framework contains nine research-based strategies divided into three groupings: (1) Creating the Environment for Learning, (2) Helping Students Develop Understanding, and (3) Helping Students Extend and Apply Knowledge. The framework offers educators the ability to select a strategy or approach to address specific learning goals within the education process.

Table 2 identifies Marzano's nine strategies and three groupings, including a description of each category. Reflecting the ability of educational strategies to benefit multiple learning objectives, each RBIS summarized in this article is classified into two primary research-based strategies utilizing Marzano's framework for effective instruction (Dean, Hubbel, Pitler & Stone 2012).

Table 2:
Marzano's nine categories of instructional strategies

INSTRUCTIONAL STRATEGY	DESCRIPTION
I. CREATING THE ENVIRONMENT FOR LEARNING 1. Setting objectives and providing feedback 2. Reinforcing effort and providing recognition 3. Cooperative learning	Focusing on the achievement of shared instructional goals and measurable outcomes Providing rubrics and instructional guidance to ensure appropriate recognition of student effort Group and team-based learning to enhance student interpersonal skills within a group environment
II. HELPING STUDENTS DEVELOP UNDERSTANDING 4. Cues, questions, and advance organizers 5. Nonlinguistic representations 6. Summarizing and note-taking 7. Assigning homework and providing practice	Pre-work, project templates, and organizers to guide student work; connecting prior and new knowledge Reinforcement of verbal concepts and terminology through graphs, models, frameworks, videos, and visuals Paraphrasing, organizing, analyzing, and extracting essential information to increase comprehension Practice for inside and outside the classroom, homework policies with the goal of enhanced learning
III. HELPING STUDENTS EXTEND AND APPLY KNOWLEDGE 8. Identifying similarities and differences 9. Generating and testing hypotheses	Analyzing, comparing, categorizing, and creating parallels to break down complex concepts Inquiry-based learning through decision-making processes such as data analysis tools and case studies

Highlights of Research

This section provides detailed summaries of the eleven RBIS published in 2019, offering key findings from each study. These research annotations give accounting educators a convenient analysis to enhance curriculum and instruction, based on the classroom design function and categorized by Marzano's nine instructional strategies.

Christensen, Harrison, Hollindale & Wood

Marzano instructional strategy classifications: *cooperative learning, generating and testing hypothesis*

While group work continues to receive attention in educational research, few studies examine team-based learning, an instructional strategy where students not only learn content but also enhance their interpersonal and professional skills through a 'cooperative learning environment.' Authors Jacqueline Christensen, Jennifer Harrison, Janice Hollindale, and Kayleen Wood examined Australian students' attitudes and teamwork skills in their article titled *Implementing Team-Based Learning (TBL) in Accounting Courses*.

The study, conducted in introductory financial accounting classes, involved a modified flipped classroom approach, where the authors selected teams and required students to complete work in advance of class. In-class pre-work, known as Readiness Assessment Tests (RATs), assessed student pre-class preparation. Next, all team members worked together on the same RAT during class to allow for team discussions. Afterward, instructors reviewed the assignment and solutions, responded to questions, and directed the group with additional work. Online team management software was used for peer evaluations to address any team member contribution issues.

Over 470 Australian students were surveyed to determine course-specific attitudes both before teams were selected and after completing teamwork. Results revealed a positive increase in student attitudes and perceptions of accounting after the TBL experience, predominantly for quantitative majors such as accounting, finance, or economics. However, according to the authors, attitudes generally declined for students in other majors, possibly caused by student preferences for traditional instruction. Additionally, the study revealed that student attitudes towards accounting in a traditional classroom declined more significantly than those in a team-based environment. Finally, students perceived an increase in their ability to work in teams and perform in leadership roles after the course ended. The article offered insights into student attitudes on accounting courses and the soft skills obtained by students working in teams.

D'Aquila, Wang & Mattia

Marzano instructional strategy classifications: *nonlinguistic representations, summarizing and note-taking*

Authors Jill M. D'Aquila, Daphne Wang, and Angela Mattia analyzed student use of instructor-generated videos in multiple U. S. introductory financial accounting classes from 2014 to 2018. Both face-to-face and blended classes received access to pre-recorded live class sessions, exam reviews, syllabi reviews, course outlines, and problem-solving videos available on YouTube. The resulting work titled *Are Instructor Generated YouTube Videos Effective in Accounting Classes? A Study of Student Performance, Engagement, Motivation, and Perception* (2019) reviewed data from 246 participants, confirming prior research and adding to the understanding of videos as a valuable instructional resource.

The results revealed that students prefer videos over study guides or text and more frequently watched administrative and exam review videos, which, according to the study, increased grade performance. Performance increases were higher in

accounting/finance majors, traditional students, and nonathletes. Based on YouTube data analytics, students preferred shorter videos (10-15 minutes) and typically watched only half of the recorded lectures provided for absent students.

The authors recommended discussion boards for student questions during video views. They suggested the use of videos at the upper level due to their proven effectiveness. Student benefits included the ability to review challenging areas numerous times and to skip over other content, thus allowing 'selective viewing.' The authors discussed the benefits of videos overall, including freeing up classroom time, the relative ease and speed of preparation, and their usefulness for multiple sessions and semesters, which counter the challenges posed by most faculty opposed to online classroom instruction due to the difficulty of course preparation. Survey results indicated that students did not want videos to replace traditional face-to-face classes.

Dong, Bai, Zhang & Zhang

Marzano instructional strategy classifications: *assigning homework and providing practice, summarizing and note-taking*

Research studies have classified the deep study approach as an intense level of study with student engagement designed to find meaning and connection between current and prior knowledge (Biggs, Kember, and Leung, 2001). This approach has been found to result in more significant student achievement and satisfaction. However, studies suggested that students prefer the surface study approach, where the standard of short-term memorization meets minimum course requirements (Biggs, 1987).

A survey of over 400 Chinese accounting students investigated the relationship between student learning and the students' study approach in learning International Financial Reporting Standards in an Association of Chartered Certified Accountant (ACCA) education program. Authors Nanyan Dong, Meng Bai, He Zhang, and Junrui Zhang examined gender differences, study approaches, English competency, and learning performance in students registered with ACCA at the fundamentals level (primarily multiple-choice questions) and the professional level (case analysis requiring higher cognitive processing and analysis).

Results showed that students in the ACCA's professional level used the deep approach more frequently but required longer student preparation time, resulting in higher test scores on the ACCA's global exams. Neither gender nor English competency affected a student's study approach, although a similar study in Hong Kong found that students with language challenges typically engaged in surface learning (Gow, Kember & Chow, 1991).

The authors of the article titled *Approaches to Learning IFRS By Chinese Accounting Students* point to the benefits of encouraging students to adopt the deep study strategy to ensure stronger learning outcomes. This RBIS reveals the importance of student practice to enhance learning through a more advanced level of summarizing and note-taking.

Holmes, A. F., S. Zhang, and B. Harris

Marzano instructional strategy classifications: *setting objectives and providing feedback, reinforcing effort and providing recognition*

Accounting professionals require strong written communication skills, a competency sought by recruiters, and reinforced by the numerous accounting education frameworks. Research by Amy Holmes, Shage Zhang, and Benjamin Harris presented suggestions to increase students' written communication skills based on specific guidance from the instructor.

In the study, 104 U.S. students prepared two separate writing assignments, each requiring a professionally written memo to a fictitious client. The first assignment included no instruction other than the general knowledge that writing skills would be assessed. However, Assignment 2 divided participants into three categories, with varying levels of intervention—low, medium, or high—to measure the impact of each intervention on student learning.

Results showed that a high level of instruction caused the most significant improvement in student performance. This high instruction level took place in a full class period and included the following: specific training on effective business writing, discussions on the importance of professional writing, resources for writing improvement, and student rubrics with graded feedback from the first assignment. Less effective results were found with the low intervention group (a rubric and graded feedback only) and the medium intervention group (a rubric, graded feedback, and written handouts).

The paper titled *An Analysis of Teaching Strategies Designed to Improve Written Communication Skills* points to the importance of a high level of detailed instruction for assignments to maximize improvements in student work.

Jares, Wilcox, Calahan & Dickey

Marzano instructional strategy classifications: *reinforcing effort and providing recognition, assigning homework, and providing practice*

Online Adaptive Learning Technologies (OALT) are systems designed to provide students with immediate feedback to modify their learning approach to improve performance. These programs, used by several textbook publishers, aim to increase student metacognition, i.e., the ability to understand one's own thinking and learning. The goal of OALT is to customize student learning through enhancing student metacognition, as prior studies have shown that students with high metacognition generally perform better academically.

Authors Timothy Jares, William Wilcox, Ryan Calahan, and Gabe Dickey studied McGraw-Hill's LearnSmart® software to see the effect on student performance in their article *An Examination of the Effectiveness of Online Adaptive Learning Technologies*. Their research questioned whether OALT helped students feel more prepared and more interested in the course and whether OALT increased perceived and actual learning. Forty senior-level students in accounting and finance in the U.S. used the software as a graded assignment during one semester.

The results were mixed. Students earning a grade of B found the OALT to be more helpful than the A or C students. The study showed that both B and C students felt more prepared through LearnSmart® and found the topic more interesting, reporting a higher engagement level, particularly at the beginning of the course. Additionally, students who said that the OALT increased retention showed an increase in exam performance, primarily on exam one. Suggestions for future studies included the need to analyze the relationship between preparation, engagement, and performance and to examine the effect of OALTs on students at the beginning of their college experience.

Opdecam & Everaert

Marzano instructional strategy classifications: *cooperative learning, setting objectives, and providing feedback*

Eight years of data were used to investigate whether freshmen students prefer lecture or team-based learning in a financial accounting course. The study, conducted in Belgium and titled *Choice-Based Learning: Lecture-Based or Team Learning?* analyzed student satisfaction when provided a choice of learning modality. Regardless of choice,

classes were 90 minutes, where preparation and attendance were required in the team-based approach compared to lectures, where attendance was optional.

Students were passive in the lecture-based courses, whereas instructors worked as coaches to facilitate work in the team-based classes, with a ratio of instructor to student at 1:36 compared to the lecture where it was 1:150-200. Each format covered the same material. The authors differentiate team-based and group learning by pointing to the long-term commitment of teams who work collaboratively with the instructor, receiving 'integrated assessment,' compared to the occasional group activity, with short-term assignments frequently completed outside of class.

Of the 2,756 Belgium students in the research, an average of 64% chose lecture-based learning compared to 36% for team-based learning. Student feedback revealed a variety of explanations, many very specific about their style preference for independent versus group work. Both groups expressed satisfaction with their choice at the end of the course, indicating they would not have changed their selected instruction mode. Students in the team-based group showed more significant improvements in a pretest/post-test analysis.

Authors Opdecam and Everaert pointed out several essential outcomes from the study, including the fact that over half of the students chose the traditional format, along with the need for extra teaching sessions and possibly additional funding, for team-based learning. They suggested that due to the popularity of the choice, learning outcomes might be different if students were forced to be in a learning format that did not suit their preference. Finally, the authors noted an essential outcome for instructors, where choice-based learning resulted in higher job satisfaction, as instructors were able to select the classroom most suited to their strengths and style.

Precourt & Gainor

Marzano instructional strategy classifications: *setting objectives and providing feedback, reinforcing effort and providing recognition*

The frequency of class discussion participation and class attendance rates provided the basis for analysis in the article *Factors Affecting Classroom Participation and How Participation Leads to Better Learning* by Elena Precourt and Maryella Gainor. The study involved 20 U.S. classes at the 200, 300, and 400 level, 595 students, two professors, two-night classes, and two semesters, with an average class size of 35 students. Participation contributed to 10% of the course grade in the study, with the three components (frequency, consistency, and attendance) weighted equally.

The data revealed several interesting insights into students' class participation. Most importantly, exam grades were 25% higher for students with high participation grades. Participation was more significant in classes of longer duration (75 minutes versus 50 minutes), where students had a better opportunity for participation. Average participation grades were 82%, with 67% of students participating at least once per class, indicating that males participated more than females.

Using an instrument developed by Gainor and Precourt (2017), known as the Qualified Participation Method, or Q.P., course instructors reviewed student self-assessment of participation, reported electronically after class. Only 'meaningful' participation counted. Results showed that participation increased with the inclusion of numerous small group projects and frequent, random questioning of students, intending to develop a more comfortable classroom environment.

The authors acknowledge that the subjectivity of self-reporting created a limitation to their study. They recommend that faculty share the results of this study

with students to encourage class preparation and participation and the resulting increase in course grades.

Silva, Rodrigues & Leal

Marzano instructional strategy classifications: *reinforcing effort and providing recognition, nonlinguistic representations*

Authors Rui Silva, Ricardo Rodrigues, and Carmem Leal used game-based learning to engage students in developing learning flow to increase learning outcomes and address boredom, apathy, and student dropout rates. Game-based learning involves educational games designed to increase student interest through progressively difficult learning challenges. The authors tested game-based learning strategies to analyze students' learning flow, asserting that greater flow would improve performance. The concept of flow, similar to the idea of being 'in the zone,' derives from studies in psychology that describe individuals who are highly focused and absorbed in a challenging activity (Csikszentmihalyi, 1990).

Two online games were created for the study, designed to promote student engagement and attention while also enhancing student learning. Twenty Portuguese institutions of higher education participated, including over 3,000 accounting students and over 450 marketing students. The study included a control group that did not use the game in their courses. While the study primarily occurred in class, over 87% of students played the game outside of class.

The study analyzed attributes of student learning flow such as concentration, clarity, challenge, autonomy, feedback, social interaction, and perceived learning, revealing statistically significant increases in almost all dimensions. *Play It Again: How Game-Based Learning Improves Flow in Accounting and Marketing Education* suggested that educational games increase student flow, which in turn enhanced student interest and concentration and, ultimately, learning.

Stephenson

Marzano instructional strategy classifications: *reinforcing effort and providing recognition, setting objectives and providing feedback*

Author Sandria Stephenson created a learning style assessment tool known as LAMP-D (Learning Styles Assessment Modalities Preferences Diagnostics) to provide educators with a method to determine student learning style preferences. The article proposed that accounting educators can use knowledge of a student's learning style to tailor classroom instruction to students' preferences and assist instructors in selecting appropriate assessments.

The LAMP-D framework assesses four learning styles: visual, auditory, kinesthetic, and tactile, and examines the relationship between learning styles and learning modalities. Over 120 students in two upper-level cost accounting courses in the U.S. voluntarily participated in the study. The author examined the relationship between a student's preferred learning style and the preferred learning assessment in accounting education.

The research suggested that regardless of the student's learning style, student learning is most effective with a participative learning environment, such as case studies, while multiple-choice assessment was the least effective for all learning styles and may not successfully assess student learning. The article titled *Learning Styles Assessment Modalities Preferences Diagnostics (Lamp-D): A Framework of Accounting Students' Preferred Learning Styles and Course Learning Assessments* recommended that accounting educators should be aware of the diversity of student learning styles, adapt their instructional strategies to address these learning styles and that when

choosing an assessment method, case studies and simulations are preferred over multiple-choice questions.

Tan

Marzano instructional strategy classifications: *cooperative learning; cues, questions, and advance organizers*

Collaborative case-based courses create challenges for students accustomed to the passive lecture format found in most traditional classrooms. Hwee Tan's study examined using a structured activity workbook to better prepare advanced management accounting students in a Canadian classroom utilizing the case method of instruction. Each student received a workbook containing directions and a timeline, required meeting minutes, guidelines on evaluating group and individual discussion questions, homework logs, assessment prompts, and other guidance.

Groups of five to six students, strategically selected by the instructor, worked together on each case study, alternating the stakeholder or consultant's role. The workbook provided activities to direct the groups in their discussions and presentations. Students were assessed for in-class presentations and out-of-class written memos, ensuring student participation from each group member.

The article Using a Structured Collaborative Learning Approach in a Case-Based Management Accounting Course used the retrospective pretest-posttest design to assess student knowledge, critical thinking, and teamwork skills after the course ended, resulting in positive student perceptions. The authors suggested that the challenges of using a typical question and answer format found in most case studies can be lessened through the use of a structured collaborative learning resource that guides students to increase their organization skills.

Wang, Tsiligiris & Hartley

Marzano instructional strategy classifications: *cooperative learning, cues, questions, and advance organizers*

Group work and project-based learning (PBL) are instructional strategies to promote the development of essential skills for professional accounting work. Assignments are challenging as students learn to work together on complex problems as a team. PBL is well-documented as an instructional strategy that promotes critical thinking and problem-solving. When assigned as a group, each student benefits from the insights and abilities of others. However, group dynamics frequently challenge both the group and the instructor or tutor responsible for guiding and grading the work.

Authors Jing Wang, Vangelis Tsiligiris, and Robert Hartley studied the A3 planner's use to facilitate a PBL group assignment in undergraduate accounting and finance classes in the U.K. The A3 tool is a lean manufacturing procedure developed by Toyota to assist in problem-solving and project management. The A3 planner designed for the study provided a template to record areas such as meeting dates, status, feedback, follow-up actions and roadblocks, providing a useful roadmap of the assignment's project for all group members.

In the article Perceptions of The Benefits of The A3 Planner in Facilitating Project-Based Learning in Accounting Education, data was gathered from students and tutors to evaluate the A3 planner for a business plan presentation and report. Results showed that while the experience was positive overall, few used the tool for the entire project. However, without the planner, students procrastinated on large projects and lacked organization. The A3 planner appeared to mediate these problems, streamline tutor feedback and communication, increase project management skills, and support the tutor's ability to mentor students. The study suggested that using the A3 planner in a

group assignment allows teams to track and document the project's status and assist with the difficulties in PBL group assignments.

Table 3 summarizes key findings by author, providing insight into student learning outcomes based on each research paper.

Table 3:
Summary of Key Findings by Paper

Citation	Key Findings
Christensen, J., Harrison, J., Hollindale, J. & Wood, K. (2019). Implementing team-based learning (TBL) in accounting courses. <i>Accounting Education</i> , 28(2): 195–219.	Student attitudes for certain majors increased in team-based learning (TBL) classes; other majors preferring traditional classrooms showed declining attitudes. TBL increases the perception of enhanced leadership and teamwork soft skills.
D'Aquila, J. M., Wang, D. & Mattia, A. (2019). Are instructor-generated YouTube videos effective in accounting classes? A study of student performance, engagement, motivation, and perception. <i>Journal of Accounting Education</i> , 47: 63–74.	Students prefer instructor-generated videos over study guides and text, increasing grades by watching administrative and exam review videos.
Dong, N., Bai, M., Zhang, H. & Zhang, J. (2019). Approaches to learning IFRS by Chinese accounting students. <i>Journal of Accounting Education</i> , 48: 1–11.	Students preferred surface study approaches for class memorization; however, the deep study strategy required of case studies ensured greater learning outcomes.
Holmes, A. F., Zhang, S. & Harris, B. (2019). An analysis of teaching strategies designed to improve written communication skills. <i>Accounting Education</i> 28(1): 25–48.	A high level of instruction for writing assignments resulted in greater improvements in student performance compared to medium or low levels of instruction.
Jares, T., Wilcox, W., Calahan, R. & Dickey, G. (2019). An examination of the effectiveness of online adaptive learning technologies. <i>The Accounting Educators' Journal</i> , 29(1): 61–80.	Online Adaptive Learning Technologies (OALT) students who felt more prepared through LearnSmart® also found the topic more interesting and reported a higher engagement level. Improvements for 'B' students were greater than 'A' or 'C' students.
Opdecam, E. & Everaert, P. (2019). Choice-based learning: lecture-based or team learning? <i>Accounting Education</i> 28(3): 239–273.	When given a choice between lecture versus team-based learning, more students chose lecture. If forced outside their preference, results suggest learning outcomes decline.
Precourt, E. & Gainor, M. (2019). Factors affecting classroom participation and how participation leads to a better learning. <i>Accounting Education</i> , 28(1): 100–118.	An instrument used to quantify class participation revealed a correlation between meaningful participation and course grades.
Silva, R., Rodrigues, R. & Leal, C. (2019). Play it again: how game-based learning improves flow in Accounting and Marketing education. <i>Accounting Education</i> , 28(5): 484–507.	Educational games increase student flow, which in turn enhances student interest and concentration and, ultimately, learning.
Stephenson, S.S. (2019). Learning styles assessment modalities preferences diagnostics (lamp-d): a framework of accounting students' preferred learning styles and course learning assessments. <i>The Accounting Educators' Journal</i> , 29(1): 81–113.	Faculty should understand student learning styles and adapt their instructional strategies to address these learning styles. When choosing an assessment method, case studies and simulations are preferred over MCQ.
Tan, H. (2019). Using a structured collaborative learning approach in a case-based management accounting course. <i>Journal of Accounting Education</i> , 49(2): 1–17.	A structured activity workbook enhances the process for advanced management accounting students with the case method of instruction.

Wang, J., Tsigiris, V. & Hartley, R. (2019). Perceptions of the benefits of the A3 planner in facilitating project-based learning in accounting education. <i>Accounting Education</i> , 28(3): 221–238.	Using a planner in a problem-based learning assignment made tutor feedback and communication more efficient, increasing student skills in project management and aiding the tutor’s ability to mentor students.
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Summary

This paper provides a resource of current RBIS from top-ranked accounting education journals from the 2019 academic literature. Recent studies reveal a decline in empirical research from accounting education. As such, this article creates convenient access and promotes the dissemination and implementation of tested teaching innovations and approaches to address concerns in the academy. With conclusions based on peer-reviewed data analysis, the included strategies contain evidence that the pedagogical approaches achieve the desired learning outcomes. Data-driven results, beyond anecdotal observations, inform educators about the science that supports student learning improvements, potentially reducing the trial and error method of testing a strategy for effectiveness.

Papers are categorized according to Marzano’s instructional strategies framework for effective instruction, guiding educators in instructional design to maximize student learning. Included are classroom-tested practices and innovations for online and face-to-face classes that provide a learning-centered instructional approach. Topics include studies on team and group-based learning, class participation tools, cases on costing and options modification, and the use of instructor-created videos. These research-based instructional strategies provide an important resource of learning-centered educational approaches and contribute to the academy’s use of empirically-based educational research.

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