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Best Practice in Developing Critical Analyses: An Empirical Study of Self-Efficacy from an Interdisciplinary Perspective

Coleen E. Sams

University of South Florida, Tampa, cesams@mac.com

Doreen Sams

Georgia College & State University, doreen.sams@gcsu.edu

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Keywords

Case study, Critical thinking, Efficacy, Empirical, Pedagogy

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Coleen Sams University of
South Florida St.
Petersburg, Florida, USA
cesams@mac.com

Doreen Sams
Georgia College and State University
Milledgeville, Georgia, USA
Doreen.sams@gcsu.edu

Abstract

Despite substantial usage of case study analyses as learning tools in diverse fields of study, business graduate students often arrive with little to no prior knowledge in how to effectively use this tool. Using the Sams efficacy model (2009) strategic to business education this study identified a dearth in the usage of case study analyses in business graduate courses and also provides a step-by-step process to increase critical analysis and efficacy through the usage of case studies. Findings demonstrate that critical analysis is developed through a combination of teaching tools through additive strategies to impact more learning modalities at the graduate education level. A counter-intuitive finding was that formative written feedback did not significantly increase the development of case study analyses skills; this finding supports the additive model. This research brings forward universal best practices for developing critical analysis, as self-efficacy in business applications also increases.

Keywords: Case Study, Critical Thinking, Efficacy, Empirical, Pedagogy

Introduction

Bandura's seminal work on efficacy (1977) identified self-efficacy as key to success in specific areas of human achievement. Self-efficacy is vital to college students' grade point success, as well as retention in college. Individuals with high self-efficacy see difficulties in specific areas as "challenges" rather than "threats," and are therefore more likely to persist despite setbacks (Bandura, 1993). The relationship between academic self-efficacy and college success is established across gender, age, and ethnicity. However, it is academic self-efficacy that is domain-specific; therefore, it must be measured within the specific area of concern or interest. Self-efficacy, in general, is not as strongly predictive of success in specific coursework; however, essential efficacy (i.e., general efficacy) can be developed (Zajacova, Lynch & Espenshade, 2005). This study fills a gap in the literature by examining discipline-specific influences on the development of self-efficacy of students in graduate programs in the business discipline.

In the Sams study (2009), teaching cases were used as tools for developing self-efficacy in pre-service teachers' perceived abilities to work with students from cultures other than those of the pre-service teachers. The Sams model engages all four efficacy-building elements: mastery, verbal, physiological, and vicarious experiences (Bandura, 1977). For

the purpose of this study, self-efficacy is defined as an individual's belief in his or her ability to successfully perform a task (Gist & Mitchell, 1992) and affect change in similar future situations through mastery.

While the model presented in this paper was initially developed using teacher education cases with College of Education majors, this study's procedures and results were examined engaging College of Business second-year graduate students. This study adds value to the field by extending the research began in the field of medicine and recently examined in the Sams (2009) study of undergraduate College of Education students by empirically testing concepts applicable to masters student in the College of Business. Therefore, the purpose of this study fills a gap in the literature by 1) empirically testing the Sams' (2009) model across a sample of students from a college of business, 2) testing the model at a higher educational degree level, and 3) providing recommendations for pedagogical best practices across disciplines. For the current study, hypotheses were developed.

This study allowed the researchers to examine the effects of various teaching methods for business case study analyses as to their ability to increase self-efficacy of graduate business students. The current study is a longitudinal study across two academic years conducted at a university in the southeastern United States.

An observational exploratory research method was used to investigate phenomena that are too complex for other methodologies, and which explain phenomena occurring in real-life contexts (i.e. academic learning) in which the boundaries between these phenomena and the contexts are not clearly evident (Yin, 1994). The researchers' goals are to generalize the theory of efficacy-development (Bandura, 1977) to graduate level business student participants, and to identify participants' perceived benefits of rehearsing their new knowledge (Cambourne, 1995). The initial model, Sams model 1, examined pre-service teachers using teaching case studies. Pre-service teachers are not expected to bring professional experience to the classroom. However, it must be recognized that graduate level business students participating in this study (i.e., domain-specific) traditionally work in business environments (e.g., accountants, computer information systems consulting, economists, financial consulting, management, marketing, etc.) at least part time while earning their Master of Business Administration degree and they bring varying levels of business experience to the classroom. These students come from the business world where a *bottom-line* mentality is a strong driver of business success. Therefore, *bottom-line* mentality is expected to play a role in the participants' drives to personal self-efficacy and thus differentiates them from students in other disciplines, such as education wherein the *bottom-line* mentality is not expected to be as ingrained by that profession's norms. This study fills a gap in the literature by testing the relationships in the conceptual model at the graduate business student level across time and treatments.

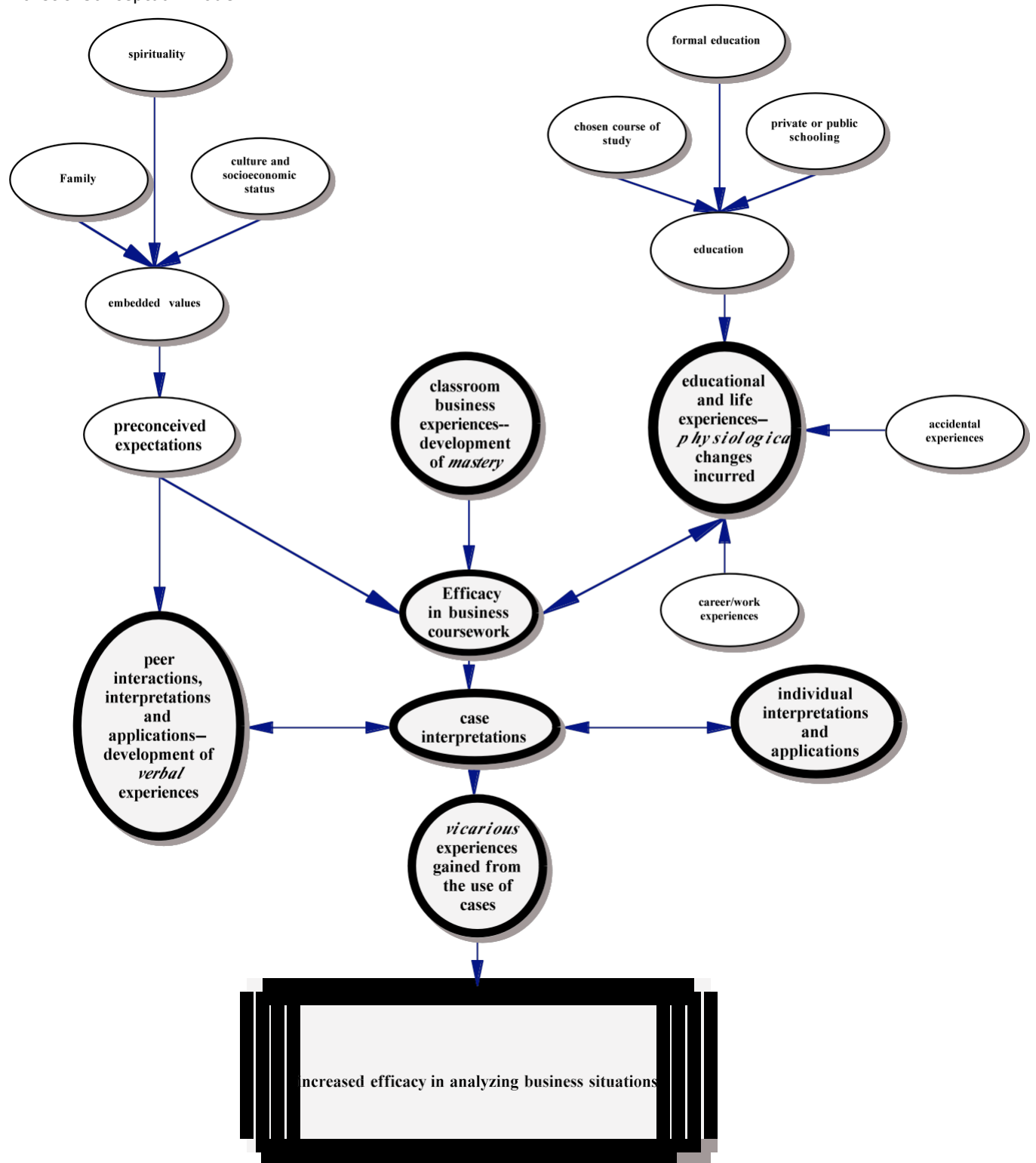
Literature Review and Conceptualization

Bandura coined "self-efficacy" within a behavioral context in the 1970s; within two decades the term was accepted in many fields as diverse as phobias, athletic performance, and teacher performance (Bandura, 1977). Grabowski, Call, and Mortimer (2001) determined that some aspects of self-efficacy develop at various ages; while at other age levels self-efficacy develops as a result of the actions or assessments of respected others.

The use of case study analyses in college classrooms is a well-established teaching technique. Historically, case study usage was first developed in medicine. The legal profession soon followed, trailed shortly by business educators and others. Research across disciplines has shown the effectiveness of learning tools such as case study analysis. However, case study analyses as learning tools are perceived to be more or less effective based on accompanying teaching techniques and classroom assistance. For example, Cooper and McNergney's study (1995) posits that writing of, and teaching of, case studies are not limited to an exact template, but rather a reflective and critical analysis of an event that leads to questions and possible alternative solutions. Similarly, Joseph Schwab, University of Chicago, saw case study analyses as teaching tools on two levels: the objective level in which participants discussed the facts of cases; and the reflexive level in which participants interpreted salient points of cases for themselves (Shulman, 1992). Perhaps the most challenging developer of efficacy through this model is mastery. Mastery can be developed during the "rehearsals" or discussions of cases (i.e. group analysis) (Cambourne, 1995) for some it may require extensive classroom experience to achieve.

The following conceptual model, model 1, provides a holistic view of the efficacy process (Sams, 2009). Prior case study analyses experience, not relevant in model 1, is hypothesized as a significant variable in the hypothesized additive model, model 2, for this study. Relationships to be tested in model 2 are highlighted in grey in the following conceptual model.

MODEL 1
Holistic Conceptual Model



Hypothesized Relationships

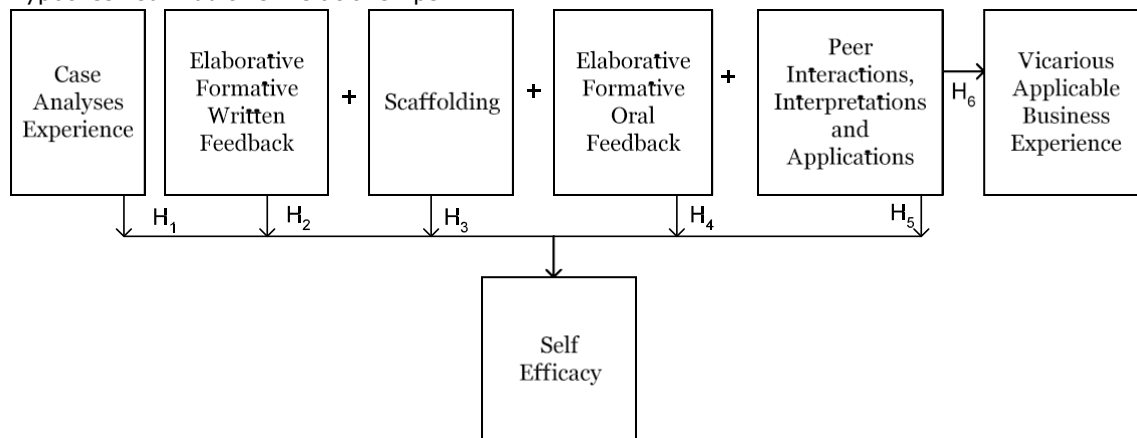
Each respondent holds some perception of his or her ability to complete a case analysis successfully. However, the belief in his or her own ability to perform the task to the level of expectations of the professor varies depending on the respondent's level of confidence. It is hypothesized that the elements of model 2 influence that level of confidence and therefore influence self-efficacy.

For the purpose of this study, the additive model 2 hypothesizes six relationships based on the knowledge of case study analysis and self-efficacy literature examined in this research: 1) previous case analyses experience is expected to influence self-efficacy; 2) elaborative formative written feedback is expected to influence self-efficacy; 3) elaborative formative written feedback plus scaffolding (i.e., voice-over PowerPoint lecture) is expected to influence self-efficacy; 4) elaborative formative written feedback, scaffolding, plus elaborative formative oral feedback (professor) is expected to influence self-efficacy; 5) elaborative formative written feedback, scaffolding, elaborative formative oral feedback (professor), plus peer interactions and applications within group is expected to influence self-efficacy; and 6) all additive elements of the model are expected to influence self-efficacy.

Based on research supporting the Sams model (2009), the six hypothesized relationships are shown in model 2. All participants in the study were given the same rubric to use for analysis of all cases and subject to a very basic lecture on analyzing cases prior to the treatments.

MODEL 2

Hypothesized Additive Relationships



Two Schwab cases provided participants the opportunities to "alternate between cognition and metacognition, between addressing the case and analyzing their own processes of analysis and review" (cf Shulman, 1992, p. 15) based on the facts of the cases. The mastery element of self-efficacy develops as students experience success in the targeted field of study. When one examines success as a basis for establishing self-efficacy, for example, if a professor creates successful outcomes for students, then they will believe in their self-efficacies to be successful in future similar experiences (Bandura, 1993).

Therefore, based upon one's own mastery, self-efficacy over future similar situations is expected to be higher.

H₁: There is a positive relationship between the amount of case study analysis experience and the participants' self-efficacy as to his or her ability to perform successfully on subsequent written case study analyses.

When individuals' abilities are affirmed and encouraged by valued others (e.g., professor), self-efficacy is expected to increase regardless of previous experience. These individuals are more likely to seek challenges and opportunities for growth than those who view themselves as limited by "inherent capacity" (Bandura, 1993, p. 120). Setbacks or failures will be interpreted as events requiring more practice or alternate paths (e.g., scaffolding), for eventual success (Bandura, 1993) by those with high self-efficacy, whereas individuals who perceive themselves of "inherent capacity" will seek paths with lower risks for failure (Bandura, 1993). According to Bandura:

For those who viewed ability as reflecting an inherent intellectual aptitude, their perceived efficacy plummeted as they encountered problems, they became more and more erratic in their analytic thinking, and they lowered their aspirations for the group (Bandura, 1993, p. 121). Therefore, affirmation and encouragement are expected to increase self-efficacy. Thus, the following are hypothesized.

H₂: Written formative feedback from the professor significantly increases the participants' self-efficacy as to his or her ability to perform successfully on subsequent written case study analyses.

H₃: A case study analysis learning experience including elaborative formative feedback and scaffolding (e.g., voice-over PowerPoint) significantly increases the participants' self-efficacy as to his or her ability to perform successfully on subsequent written case study analyses.

Verbal persuasion, authentic praise from a respected source (e.g., professor and/or peers) and demonstrated success, can increase an individual's self-efficacy (Bandura, 1993; Pajares & Bengston, 1995). It should be noted that physiological states (i.e., positive and negative emotions) also predict self-efficacy (Zajacova, Lunch & Espenshade, 2005). Thus, effort plays a strategic role in success.

Relationships between self-identity and the communicated objective public identity (COPI) of peers were studied by Sherwood (1965). In his findings, the researcher found that "self-identity is a function of subjective public identity, which is, in turn, a function of objective public identity" (p. 66). Changes in self-concept were affected by the importance of peers, the individual's degree of participation in the group, and the extent to which the peer group communicated its objective public identity to the individual. French, Sherwood and Bradford's (1966) study on communicated objective public identity (COPI) established the impact of feedback on self-identity. The researchers determined that the amount of internal change on the individual's part was dependent on dissatisfaction with current self-identity and the desire for change on the part of that individual; the greater the dissatisfaction the greater the likelihood of change. In Pajares's metanalysis of self-efficacy the researcher determined that "self-perceptions of capability determine what individuals do with the knowledge and skills they have...self-efficacy beliefs are critical determinants of how well knowledge and skill are acquired in the first place" (Pajares, 1997, p. 2). Collaboration peer

cases study analyses (i.e., self-selected team participants), through peer feedback, is expected to impact self-efficacy. Therefore, the following hypotheses are offered.

H₄: Formative oral peer feedback coupled with formative written feedback and scaffolding significantly increases the participants' self-efficacy as to his or her ability to perform successfully on subsequent written case study analyses.

H₅: Peer interactions, interpretations, and applications coupled with formative written feedback, scaffolding, and formative oral feedback significantly increases the participants' self-efficacy as to his or her ability to perform successfully on subsequent written case study analyses.

Verbal efficacy develops as participants discuss possible alternative solutions to the cases. Teaching cases may be used to provide examples of "a case of..." (Shulman, 1992, p. 21), as opportunities to see issues from other perspectives, to develop critical analyses, and/or to develop self-efficacy from vicarious experiences (Merseeth, 1994). In other words, vicarious experience from observing another's successful response to a situation; increases self-efficacy of the individual believing that the success modeled can be imitated.

While Shulman (1992) posits that teaching cases (e.g. case study analyses) must reflect events that can be generalized due to their relatively frequent occurrences, other pedagogies of teaching cases do not place that stricture on teaching cases. This discussion also affords both physiological development when responses enter Bakhtin's (1983) interstitial spaces, spaces of disagreement, argument, discomfort, and vicarious development of efficacy as participants experience the dilemmas of experienced business people, experiences they realize are likely to be in their own futures. In other words, the respondent becomes more resilient and if self-efficacy is sufficiently high, then adverse results are less likely to deter the individual from attempting the same task at another time; therefore, giving him or her confidence to transfer the knowledge to the professional business environment. Based on this belief, hypothesis 6 is offered.

H₆: Participants perceive that learning from case study analyses offer vicarious business world experiences as relevant learning tools.

Because self-efficacy is a direct antecedent to the likelihood of attempting some particular action as well as to performance (Bandura, 1993), it is anticipated that participants exposed to the processes outlined above will select to attempt similar business challenges based on optimism to succeed (Carifio & Rhodes, 2002) once engaged in employment in the professional world. Further, it should be expected that their performance in analyzing business situations in the professional work world would be high (Harrison, Rainer, Hochwarter, & Thompson 1997). However, measurement of this is outside the scope of this study.

Methodology

This exploratory study primarily focuses on the "what" questions as to what "treatment" influences the respondent's individual performance and that performance's relationship to vicarious learning. The study also extends to the "how" and the "why" questions as the respondents increase self-efficacy, through mastery, in their "rehearsals" (Cambourne, 1995) of case study analyses; physiological development through stress in seeking grades;

and verbal mastery as a result of professor and peer feedback. In order to draw conclusions as to self-efficacy, the researchers depend on systematic interviews, surveys, and course artifacts to answer the "how" and "why" questions. Self-efficacy was measured indirectly through changes in grades on case study analysis and not through self-report alone; therefore, reducing the chances of bias.

This longitudinal study was conducted across four semesters, which involved four different domain specific groups (i.e., MBA students) within the 2009-2010 academic years and utilized three established methodologies of teaching case study analyses. Participants in the study were informed that the study was being conducted and assured that individuals would in no way be identified in the study. To protect the participants' identities only aggregate information was reported. The software package SPSS18[®] was used to analyze the data.

The sample for the study consisted of 92 individual second-year Masters of Business Administration (MBA) students (i.e., completed foundation courses prior to taking the course involved in this study) across four semesters (for the purpose of this study identified as groups) from a university located in the southeastern United States. To reduce response bias, answering the survey or survey questions was not mandatory, thus participation varied across groups and questions answered. Although there are differences in gender and age, the majority of the students in the study was Caucasian, which is representative of the population of the participating institution; however, the minority students (28%) were from various countries around the world such as Brazil, China, Columbia, Egypt, Germany, India, and Russia. The participants of the study were fairly equal in grade point average, as all students entering the program are required to meet standards of testing (GMAT) and grade point average. This does not mean that there were no differences, but since the study examined changes in efficacy, individual performance that deviated slightly from the mean was not expected to significantly influence the findings.

Instead of purely self-report to measure self-efficacy, cases for all groups were graded with the same rubric and differences in case analyses grades were analyzed. Increases in grades on analyses were used to measure increases in self-efficacy. Prior to the beginning of the semester, participants answered assessment-of-knowledge questions, and then at the end of the semester answered another set-of-assessment of knowledge questions. These assessments were utilized to determine the amount of case study analysis knowledge of participants prior to the course compared to the end of the course. See Table 1 below for hypothesized additive-model elements (all groups included the same rubric and same basic lecture).

TABLE 1
Additive-Model Hypotheses Measurements

Hypotheses	Group 1	Group 2	Group 3	Group 4
HO₁ Supported	Previous Case Analyses Experience = Self-Efficacy			
HO₂ Not Supported	Formative Written Feedback (professor) = Self-Efficacy			
HO₃ Supported		Formative Written Feedback (professor) + Scaffolding = Self-Efficacy		
HO₄ Supported			Formative Written Feedback (professor) + Scaffolding + Formative Verbal Feedback (Peer) = Self-Efficacy	
HO₅ Supported				Formative Written Feedback (professor) + Formative Verbal Feedback (Peer) + Scaffolding + Peer Interactions, Interpretations & Application = Self-Efficacy
HO₆ Inconclusive	All model elements = Vicarious S=Applicable Business Experience	All model elements = Vicarious S=Applicable Business Experience		

Analysis Of Findings

Construct Validity

Triangulation of sources was used to ensure validity of the findings. Multiple sources of evidence were implemented: self-assessment, artifacts (i.e., grades), and the participants' reviews of viability of using case studies as learning tools. All data were recorded in a secured database where only the researchers and research assistants were able to access it. Confidentiality was maintained throughout the study.

Interrater Reliability

Two trained research assistants individually examined and interpreted the data. Individual findings were in agreement.

Analysis of Hypotheses

Hypothesis (H₁) - "There is a positive relationship between the amount of case study analysis experience and grades in case analyses." Mastery is a skill level and, as such, involves practice in order to develop. Prior experience with analyzing case studies, therefore, would be logically expected to benefit participants. The numbers of previous case studies (self-report) in which participants have engaged were identified for group 1 (i.e., MBA students). The previous case study analyses could have been completed in either their undergraduate or graduate level work prior to taking second-year graduate level coursework. This hypothesis was measured with a correlation analysis between the reported number of previous cases completed and the written case study analysis grade for case study analysis 1. The interval scale (i.e., previous case experience) was transformed into an ordinal-interval scale and tested against a ratio scale (i.e., grades) to examine for correlation. The most frequent responses were "one-to-two cases" and "more than seven cases." Findings revealed a weak (.346) but significant relationship between the case study analysis experience and grades on the first case study analysis. See Figure 1 below for statistical analysis findings. Hypothesis 1 is supported. This finding supports the concept of mastery as developed through rehearsals of case study analyses (i.e. experience with case study analysis) supporting the findings of Cambourne (1995).

FIGURE 1
Correlations

		Cases	Grades
Cases	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	25	
Grades	Pearson Correlation	.346	1
	Sig. (2-tailed)	.090	
	N	25	25

Hypothesis (H₂) posits, "written formative feedback from the professor increases the respondent's self-efficacy as to his or her ability to perform successfully on subsequent written case study analysis regardless of previous case experience."

Members of group 1 were given a case study analysis rubric and then listened to a discussion provided by a professor (experienced in teaching case studies) as to the professor's expectations for participants' written case analyses. This group completed two written case studies. After business case study analysis 1, and prior to engaging in business case study analysis 2, participants were given elaborative formative written comments as to case study analysis 1. After case study analysis 2 was completed, the individual respondent's grades for case study analyses 1 and 2 were compared (within subject) as to changes in grades. Findings reveal from a paired sample test that hypothesis 2 was not supported. See Tables 2 and 3 below for details.

TABLE 2
Without Case Study Analysis Practices

	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Cases 1 and 2	1.01818	6.37440	.96096	-.91981	2.95618	10.06	43	.295

TABLE 3
Without Case Study Practices Comparison of Means

Group 1	Mean	N	Std. Deviation	Std. Error Mean
Case #2	25.1705	44	4.11044	.61967
Case #1	24.1523	44	5.97895	.90136

For hypothesis (H₃), group 2 received the same treatment as group 1 plus scaffolding (i.e., in-depth voice-over PowerPoint presentation) on case study analysis methodology including how to read a case, how to identify different types of cases, and how to analyze a case. This group completed one verbal and one written case study analysis. This hypothesis was examined through a paired sample test. This analysis revealed a statistically significant change in means between case study analysis 1 and case study analysis 2 ($t = 2.109$, $df = 36$, $p < .05$). This finding supports the hypothesized relationship. See Tables 4 and 5 below for details.

TABLE 4
Case Study Analysis with/without Scaffolding

	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Groups 1 and 2	2.31432	6.67373	1.09715	.08919	4.53946	2.109	36	.042

TABLE 5
Case Study Analysis with/without Comparison of Means

	Mean	Std. Deviation	Std. Error Mean
Group 2	26.2711	2.87472	.47260
Group 1	23.95568	5.79615	.95288

Hypothesis (H₄) posits that a respondent's self-efficacy increases when the peer's formative oral feedback to the participant is present was examined by comparing grades on peer case study analysis 1 where no feedback was presented before the grade was assigned and peer case study analysis 2 where verbal feedback had been received from peer case study analysis 1 prior to engaging in peer case study analysis 2. Findings show that out of group 3

participants (n=17), three participants completed only one case study analysis and so they were eliminated from the findings. Out of the remaining 14 participants, two presented a percentage change of <10% (6% and 8%), five increased between 11% and 20%, four increased their grades by 21% to 30%, and three increased their grades by 31% to 38%. Hypothesis 4 is supported demonstrating formative oral feedback from peers is a factor in increasing grades on subsequent case study analyses. However, other factors such as rehearsal play an important role in fostering an environment in which self-efficacy develops.

Hypothesis (H₅) holds that peer interactions, interpretations, and analysis during group case study analysis along with other elements of the additive model foster an environment in which self-efficacy develops. This hypothesis was measured through a self-assessment instrument, and the participants' grades on written case analysis. In order to test hypothesis (H₅), the fourth group of participants completed two verbal [i.e., one practice (rehearsal to form mastery efficacy) and one graded] group case study analyses prior to completing a case study analysis. Participants in the study formed their own groups, discussed the cases within the group prior to presenting as a group. The second verbal case study analysis received both an individual and a group grade. The groups in the study received immediate formative feedback on the first case analysis at the end of the presentation from the professor and from their peers. Thus, the experience was expected to be well-received by group members and not individually internalized as punitive.

Respondents (N 33) were queried through an anonymous survey after the first case study analysis. When conducting a descriptive analysis eleven out of twelve participants reported the feedback from peers and the professor as formative and one reported that it was neither formative nor punitive. The second verbal case analysis was also presented within the group dynamics, videotaped, and graded individually and as a group and formative feedback was provided. Also, findings from the descriptive analysis of the self-assessment as to the statement, "from my perspective, participating in a group for the first case study analysis (presenting verbally as a group) was less threatening than individually producing a written case analysis" revealed that ten out of twelve participants agreed and two disagreed. This confirms that this pedagogy fosters an environment in which the mastery dimension of self-efficacy is fostered. The descriptive analysis further revealed that ten participants out of twelve responding to the statement "If I had a choice, I would rather take my chances completing a written case analysis on my own rather than being part of a group presenting ideas from all group members" disagreed and only two agreed. Further, participants were given an open-ended question that queried whether he or she believed that the group presentations (i.e., peer case study analysis) fostered their learning experience and were asked to explain why. Findings from a descriptive analysis revealed that all participants identified the peer case application as a learning experience. Comments from the participants as to why or why not the rehearsals benefited his or her learning experience supported the hypothesis that these rehearsals fostered an environment in which self-efficacy could develop, for example "...heard different angles of the case that I had not considered; ... from others' different perspectives, I found different information in the case; ...definitely understood the case study better; ...group brings more ideas forward; ...other viewpoints help me better understand the overall issues of the case; and ...enhanced the final product." No participants reported that they did not benefit him or her. The above reported findings support the vital nature of verbal group experience in developing efficacy through case study analyses. Based on the finding of the descriptive analyses and qualitative responses, this hypothesis was supported.

Hypothesis (H6) - " participants perceive that learning from case analyses offer vicarious business world experiences as relevant learning tools" was hypothesized. A self-report showed that out of 61 participants from combined groups 1 and 2, only 37.7% report that they believed that business case study analyses are a vicarious means of developing business acumen. The remaining participants did not answer the question. Because the question was not mandatory, findings may be unreliable. Thus, findings were inconclusive and hypothesis 6 was neither supported nor unsupported.

Conclusions and Recommendations

In comparing findings of a previous study by Sams (2009) to the academic domain-specific (i.e., business education) additive conceptual model, model 2, the research confirms that the rehearsal of case study analysis contributes to increased efficacy in both business education and teacher education participants. The research supports the unique qualities of case study analysis and calls for a return to its formerly ubiquitous use.

The findings further indicate that the education practice of increasing strategies to engage more modalities remains vital even at the MBA level. Best practices for developing critical analysis, through the intentional development of respondent efficacy in the use of case study analysis, are identified through the additive conceptual model. For example, it is recommended that the professor conduct an anonymous survey of the students prior to engaging in case study learning exercises (see hypothesis #1). The survey should be structured to determine prior knowledge of the students' case analyses usage. The findings from the survey inform the professor as to the extent of scaffolding needed for successful differentiation of instructions. The findings show that it is important to provide a safe environment (group case analysis) for the first case study analysis of the semester in which students can collectively develop the case analysis. Also, the professor should provide a structured tool such as voice-over PowerPoints (i.e., comprehensive step-by-step methodology for analyzing cases), and provide professor's formative feedback (oral and written) to ensure greater success on subsequent case analyses. (See hypotheses #3 and #4.) Further, based on findings for hypothesis #5, peer input to other students such as suggestions of interpretations and applications bolsters student success on future case analyses.

The intentional development of respondent efficacy and critical analysis, through the use of case study analysis, affords participants opportunities to learn through verbal feedback from both peers and the professor, physiological changes experienced in groups and presentations, mastery through formative feedback, scaffolding and lectures, and vicarious opportunities to experience authentic business situations. Findings also counter the cognitivist paradigm of compensating, rather than providing multiple modes of developmental instruction, and, therefore, relegate the constructivist approach as more effective than the professor-as-lecturer pedagogy in MBA second year coursework.

Limitations Of The Study

The study partially relied on subjective self-report measures that may reflect response bias. However, steps such as guaranteed anonymity were taken during data collection to reduce response bias and to enhance generalizability. Further artifacts (i.e., grades) were used.

Another possible limitation was that Groups 2, 3 and 4 were recommended to view and listen to the scaffolding (i.e., voice-over PowerPoint Presentation), but the viewing was not required. Therefore, the researcher only has the respondent's word that he or she viewed and listened to the voice-over PowerPoint presentation. The researchers specifically asked if and how the voice-over PowerPoint presentation was helpful to which only positive responses were received.

Another possible limitation is that some participants were "returning students" after several years' hiatus from formal education; some were currently working in industry, while others had not worked in some time. Prior experience was not controlled and thus findings should be considered with caution.

Additionally, the holistic model was tested on students from a university located in the southeastern United States. Although there were differences in gender and age, the majority of the students in the study was Caucasian, which is representative of the population of the participating institution; however, the minority students (28%) were from various countries around the world such as Brazil, China, Columbia, Egypt, Germany, India, and Russia. Therefore, findings may not be generalized to other populations and/or cultures and research across various cultures and countries is recommended.

Future Research

This is a first measurement of these relationships and thus should be further examined across other courses at various levels within the college experience. Future research may also consider examining the relationships in model 2 across other disciplines in which teaching cases may prove effective.

Extraneous factors were not controlled for in this study such as personality type, drive, and learning ability. Therefore, further research incorporating these factors is recommended.

As to whether or not self-efficacy borne in the classroom transfers to the workforce has had little attention in academic literature. Thus, another recommendation is to collect data on participants' *life experiences* as a businessperson responsible for analyzing business situations.

A comparison of a group on grades for a written business case analysis should be compared to the written business case analyses for other groups to determine if findings hold across groups when adding the verbal business practice case study analysis in which feedback is immediate and less personal as a more effective learning tool than a rubric and lecture only or a rubric, lecture, and written formative evaluation.

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