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Online Collaborative Case Study Learning

Case study learning was integrated into a course designed to improve students' potential for academic success and increase student retention. Case studies related to self-regulation of behavior, motivation, and cognition for academic tasks were used to prompt students' critical thinking and facilitate deep learning of self-regulation topics, linking course theory with practice. This article explores the effectiveness of asynchronous computer-mediated collaborative case study learning as compared to face-to-face case study learning in enhancing the critical thinking skills of undergraduate students enrolled in a learning frameworks course.

T he ability to think critically is needed in this revolutionary age of technological change. Among the essential skills required to close the gap between the knowledge and skills students learn in schools and those required to function effectively in the workplace and community is the ability to think critically. "Economic, technological, informational, demographic, and political forces have transformed the way people work and live. . . . As much as students need knowledge in core subjects, they also need to know how to keep learning continually throughout their lives. Learning skills . . . include information and communication skills, thinking and problem-solving skills, and interpersonal and self-directional skills" are critical for students' success in life ("Partnership for 21st Century Skills," 2004). Critical thinking is essential to responsibly and effectively working within today's sophisticated technological environments. Individuals must be able to cognitively manage the increasingly complex ways to communicate, collaborate, and work with others, even in geographically disparate locations (Halpern, 1999).

What is critical thinking? "Ask twelve psychology faculty members to define the term *critical thinking*, and you may receive twelve overlap-

ping but distinct definitions (Halonen, 1995, p. 75). The mystification of critical thinking has led to a multitude of definitions. The following definition aptly illustrates the complex nature of higher order reasoning. Critical thinking is "the ability to use acquired knowledge in flexible and meaningful ways, through understanding the problem or issue, evaluating evidence, considering multiple perspectives, and taking a position" (Vanderstoep & Pintrich, 2003, p. 275). For the purpose of this study, critical thinking is operationally defined as six elements derived from Facione & Facione's Holistic Critical Thinking Scoring Rubric (1994)—the instrument used to measure critical thinking in this study. Critical thinkers (a) accurately interpret evidence, statements, graphics, and questions; (b) identify salient arguments (reasons and claims) and counterarguments; (c) thoughtfully analyze and evaluate major alternative points of view; (d) draw warranted, judicious, and non-fallacious conclusions; (e) justify key results and procedures (explaining assumptions and reasons); and (f) fair-mindedly follow where evidence and reasons lead (Facione & Facione, 1994). "Critical thinking is hard work; it requires skill and will. Academic success . . . in the form of critical thinking is a function of both cognitive and motivational factors" (VanderStoep & Pintrich, 2003, p. 224). Learning the skills of critical thinking requires practice in activities designed to facilitate critical thinking. "Those who practice thinking will get better at it" (VanderStoep & Pintrich, 2003, p. 223).

Due to the complex nature of critical thinking and the difficulty in assessing it, few empirical studies investigating critical thinking development in undergraduate students exist (Pithers, 2000). The few studies that do exist are not promising in relation to higher education's success in promoting critical thinking in students (de Sanchez, 1995; Pithers, 2000; Pithers & Soden, 1999). According to the literature, students do not necessarily develop critical thinking skills as part of their college experience. In one study assessing the critical thinking skills of 256 university students through the use of the Critical Reasoning Test (CRT), Pithers and Soden (1999) found no significant between-group differences in critical thinking for graduate versus nongraduate students or because of the stage of the course that the students were within the program. According to the authors, the lack of significance is likely due to a lack of clarity surrounding the construct of critical thinking and reliable methods to assess it, as well as a primary instructional focus on subject-matter content. Similar findings are supported within a *Teaching of Psychology* special issue on critical thinking: "A majority of students still demonstrate characteristics that correspond to a concrete thinking level rather than use formal-reasoning principles that Piaget ascribed

to adult thinkers" (de Sanchez, 1995, p. 72). How can we as educators facilitate the development of formal reasoning in our students as well as prepare our students with the skills necessary to function in this digital age? Online collaborative case study learning is one promising instructional method.

Case-based learning has been proven effective in developing students' higher order reasoning skills in a variety of instructional contexts such as teacher education (Andrews, 2002; Floyd & Bodur, 2005), legal education (Bentley & Wade, 2005; Garner, 2000), business education (Gavidia, Mogollon, & Baena, 2004; Hassall & Milne, 2004) and medical education (Jamkar, Yemul, & Singh, 2006; Shokar, Bulik, & Baldwin, 2005). Case-based learning by definition is an "active-learning pedagogy designed for problem analysis and problem-solving, stressing a variety of viewpoints and potential outcomes" (Cranston-Gingrass, Raines, Paul, Epanchin, & Rosellie, 1996, p. 158). Well-designed cases motivate and engage students as they critically analyze and synthesize course concepts, moving knowledge from theory to practice (McDade, 1995).

Does the opportunity to collaborate with peers enhance the quality of student learning in case-based learning? Klemm (2002) employed the use of case studies based on journal articles to assist his students in learning the analytical processes involved in reading and interpreting research articles in a neuroscience course for senior-level undergraduate students. Over the course of four semesters, Klemm reported, "work quality distinctly improved with each successive journal article assignment, as students learned how to help each other" (p. 8). Klemm also emphasized the benefits of using technology to support the students' knowledge-building discourse as they followed a step-by-step analytical process. His students used an asynchronous computer conferencing environment to support their collaborative analysis of case studies.

Computer-mediated communication facilitates critical thinking in collaborative case study analysis through the communication support it offers. "From a constructivist perspective, collaborative learning can . . . support learners to elaborate, explain and evaluate information in order to re- and co-construct (new) knowledge or to solve problems" (Veerman & Veldhuis-Diermanse, 2001). The technology afforded in the discussion board assists in managing the complexities of collaborative discourse by providing a written transcript of the conversation (in the form of conversational threads) and easing the cognitive load involved in referencing, searching, and participating in various parts of the conversation. The thread labels used in the discussion board function as navigational tools and ease the process of interacting in a virtual environment (Marsh & Smith, 2001). The act of writing itself provides

opportunity for deep reflection and revision of ideas. The written format also makes the students' tacit knowledge public. Faulty thinking, naïve conceptions, and errors in understanding are likely to be found and corrected (Klemm, 2002).

This current study investigated critical thinking in undergraduate students who were conditionally admitted to the university and enrolled in a learning frameworks course designed to increase academic success and retention. The following questions guided this study: (a) Will the use of self-regulation instructional case studies increase critical thinking scores in undergraduate students enrolled in a learning frameworks course? (b) Will there be a significant difference in critical thinking scores in case study learning between students analyzing cases individually and students analyzing cases collaboratively using asynchronous, computer-mediated communication?

Several studies have examined the learning effectiveness of computer-mediated, collaborative case study analysis with graduate students (Abrams, 2005; Rourke & Anderson, 2002), students enrolled in online classes (Carr, 2000; Dawson, Mason, & Molebash, 2000), or with students who were computer science majors (Benbunan-Fich & Hiltz, 1999). How effective would case study learning be with undergraduate students enrolled in a face-to-face course specifically designed to facilitate their development of the vital self-regulation issues required for academic success?

Method

This study employed a nonequivalent (pretest and posttest) control-group research design (Campbell & Stanley, 1971). The participants analyzed a total of 5 case studies over a 5-week period including the pretest and posttest. The control group analyzed the case studies individually, and the experimental group analyzed the case studies collaboratively using asynchronous, computer-mediated technology. Facione & Facione's Holistic Critical Thinking Scoring Rubric (1994) was used to measure critical thinking—the dependent variable (see Appendix A).

Participants

Eighty-three undergraduate students enrolled in four classroom sections of *Effective Learning*, an elective course taught by the investigator, participated in this study. Mean age was 20 years old (age range 18-43 years). Females comprised 60% of the students and males 40%. The majority of the participants were European American (75%), Hispanic (23%), and "Other" (2%). This third group included 1 Asian American student and 1 Persian American student. Convenience sampling was employed.

Two Monday and Wednesday sections of the course were assigned as the control group, and two Tuesday and Thursday sections were assigned as the experimental group. All students were first-semester freshmen conditionally admitted to the university and required to take this course designed to improve students' chances of academic success. The control group analyzed case studies individually; the treatment group analyzed the cases collaboratively using an online discussion board.

Instructional Materials
Case studies from *Handbook of Academic Learning: Construction of Knowledge* (Phye, 1997) and the course text, *Learning Strategies for College Success: A Self-Management Approach* (Dembo, 2000), were modified and used to stimulate students' critical thinking. The cases were directly related to the course curriculum and included academic self-management topics such as understanding motivation, goal setting, time management, and learning from textbooks and lectures. Students were encouraged to apply the learning framework concepts and theories from the course lectures and textbook readings as they analyzed the cases. (See Appendix B for a sample of the cases used.)

Procedure
All participants completed pretests to assess their critical thinking level. The pretests were in-class paper and pencil tests in which students analyzed a case in essay form related to the course curriculum and designed to prompt critical thinking. The analytical essays were graded on a scale of 1-4 using Facione & Facione's (1994) Holistic Critical Thinking Scoring Rubric (HCTSR). To ensure interrater reliability all case analyses in the study were graded by the investigator and a colleague published in the field of critical thinking.

   Case study analysis training. Scored pretests were returned to students in both the treatment and control groups during the following class session. Students reread the case prompt and their scored response to reacquaint themselves with the study. In a class discussion the students identified the cognitive analytical processes they used to think about the cases. After the students identified the cognitive processes they had used, Knoop's analytical steps (1984) were introduced to the class in the form of a template given to the students to guide their future case analyses. The analytic template was a paper copy of the web-based form students would be completing online in future homework analyses. Appendix C. Knoop's (1984) analytical steps are as follows:

   1.   Identify the problem.

2. Determine the underlying causes and symptoms of the problem.
3. Identify any unstated assumptions you are making and determine whether they are justifiable.
4. Brainstorm and list several strategies for resolution of case.
5. Evaluate each alternative, and then choose and rank your top 3 strategies according to effectiveness.
6. List your top three recommendations and present a rationale for each.

Technology training. Using a computer lab at the university during class, the investigator trained the students in both the treatment and control groups in how to access, fill out, and print the online analytic template found on the course Web site. Students were also given a paper copy of the holistic scoring rubric upon which their essays would be assessed. Students were required to turn in a printed copy of the analytic template as documentation that they had used the processes as a guide in thinking about each case.

Students in the treatment group were additionally trained in how to use the discussion board feature to discuss the case with peers assigned to them in small groups (3-4 students per group). The investigator created thread labels for each of the analytic steps within the discussion board for each of the small groups (e.g., problem identification, causes and symptoms of problem, unstated assumptions, etc.). For each of the analytical steps, students were to contribute at least one new idea, question, comment, or suggestion and respond in a thoughtful, facilitative manner to at least two other postings made by other students in the group, for a minimum of three postings per step.

Over the next three weeks, students analyzed one case per week as homework, for a total of five cases including the pretest and posttest. The control group analyzed the cases individually; the treatment group analyzed the cases collaboratively, using the online discussion board. Students in both the treatment and control group individually wrote five-paragraph essays as evidence of each analysis. The analytic template served as a scaffold to guide the students' analysis of the case studies, and the HCTSR guided the students' construction of the analytical essays. Earning a score of 4 was equivalent to an A; 3 a B; 2 a C; and 1 a D. The investigator also gave the students the criteria outlining explicit requirements for the five-paragraph essay. (See Appendix D.)

Results
Screening and Statistical Analysis
The pretest and posttest measures for critical thinking were examined for normality by using skewness and kurtosis coefficients (z-tests of greater or less than 1.96) and the Shapiro-Wilks test where indicated. Homogeneity of variance was examined across the treatment and control groups by the (dependent) variable by using the Levene test (α = .05) for univariate homogeneity of variance. Pretest and posttest scores did not violate the assumption of normality; therefore, parametric tests were used to compare the means of the two groups.

Analysis of Question 1
Would there be a significant increase in critical thinking scores from pretest to posttest in both groups? In order to test question 1, paired samples t tests and one-within repeated measure analyses were conducted across two measures: pretest and posttest (Maxwell & Delaney, 1990; Stevens, 1996). Since the HCTSR was created as an ordinal scale, nonparametric tests were also conducted to compare the obtained results from the parametric tests. The investigator employed the Wilcoxon Matched-Pairs Signed-Rank Test to analyze the data. In all, analyses of the results of the nonparametric and parametric analyses agreed.

Significant gains in critical thinking were detected within both the treatment and control groups. The mean difference within pretest and posttest scores for the experimental group was -.528, $p <$ .05, with an effect size of .736 standard deviation units. The mean difference between pretest and posttest scores for the control group was -.574, $p <$ .05, with an effect size of .635 standard deviation units. (Table 1 provides the results of the within-group analyses.)

Table 1
Critical Thinking Differences Within Individuals Who Participated in Online Collaborative Case Study Learning and Those Who Participated Individually

		M	*SD*	*F*	*df*
Experimental group	Pretest score — Posttest score	-.528	.74	18.50	35
Control group	Pretest score — Posttest score	-.574	.65	36.61	46

$p <$ .05

Analysis of Question 2

Would there be a significant difference in the depth of critical thinking in case study analysis between students learning individually and students learning collaboratively using asynchronous computer-mediated communication? In order to test question two, a one-way analysis of variance was conducted using the posttest scores (Maxwell & Delaney, 1990; Stevens, 1996). Since the HCTSR was created as an ordinal scale, a nonparametric test was also conducted to compare the obtained results from the parametric tests. The Mann-Whitney U Test was used for data analyses. In all, analyses of the results of the nonparametric and parametric analyses agreed.

No significant mean differences in critical thinking were detected between the treatment group (online collaborative discussion) and the control group (traditional individual assignment) as measured by the HCTSR. (The means and standard deviations for both groups are presented below in Table 2. Table 3 provides the results for the between group analysis.)

Table 2

Means and Standard Deviations for Critical Thinking Increases for Individuals Who Participated in Online Collaborative Case Study Learning and Those Who Participated Individually

		M	*SD*	*N*
Pretest score	Experimental group	2.78	.59	36
	Control group	2.64	.53	47
	Total	2.70	.56	83
Posttest score	Experimental group	3.31	.53	36
	Control group	3.21	.41	47
	Total	3.25	.46	83

Table 3

Critical Thinking Differences Between Groups Who Participated in Online Collaborative Case Study Learning and Those Who Participated Individually

Source	*df*	*SS*	*MS*	*F*
Between group	1	0.17	.17	.81
Within group	81	17.51	.21	
Total	82	17.68		

Findings
Statistical analyses were conducted to investigate the differences between individual and online collaborative case study learning strategies on the development of critical thinking in undergraduate students. Paired sample *t* tests and one-between repeated measure analyses were conducted across pretest and posttest measures of participants in both learning conditions. No significant differences were found between the treatment groups; however, significant gains were detected within both groups from pretest to posttest as measured by HCTSR.

Discussion
Participants in this study significantly improved their critical thinking scores through participation in online collaborative case study analysis as well as through individual case study analysis as measured by the HCTSR from pretest to posttest. This finding supports this study's hypothesis that critical thinking is a skill that can be learned through the use of case study learning with undergraduate students enrolled in a course designed to facilitate the development of self-regulatory skills.

It was hypothesized that the critical thinking score would be higher in students analyzing case studies collaboratively than in students analyzing the cases individually, due to the collaborative component affording the opportunity to view issues from multiple perspectives. However, after the case analysis homework assignments were graded and returned to students, large group face-to-face discussions were conducted in both the control and treatment groups to provide students feedback on their analyses. Perhaps the face-to-face discussions equalized the groups in providing the students not engaged in collaborative online learning the multiple perspective component expected to be present only in the online collaborative method. This "compensatory equalization of treatments" (Gall, Borg, & Gall, 1996, p. 472) may have obscured the effects of the experimental treatment.

Limitations of Study
Caution should be exercised in drawing conclusions from this study. The sample in this study was a unique population of high-risk students conditionally admitted to the university. It may be difficult to generalize the results to regularly admitted students or to other conditionally admitted students at other institutions. Not knowing how much time students worked on the assignments individually as compared to those who worked on them collaboratively limits the generalizability of the study as well. It would be helpful in future studies to have students record their time spent on the case study learning assignments.

Although the HCTSR is a practical and useful tool to assess levels of critical thinking, an instrument with greater psychometric sensitivity would be helpful to detect change in critical thinking over time. The instrument itself allowed little variability, since it was created on a scale of 1-4. Having a more sensitive instrument would help to detect discernible differences more effectively. Perhaps modifying the HCTSR's 4.0 scale to a 5.0 scale would increase variability in scores, increase interrater reliability, and coincide more effectively with the A-F academic scale.

Implications for Practice

The findings of this study support this study's hypothesis that critical thinking can indeed be taught. Undergraduate students can significantly improve their critical thinking skills within the course of a semester through participation in well-designed instructional activities. Several design factors likely contributed to the students' gains in critical thinking. First, relevant and interesting case studies motivated the students and initiated the analytical cognitive processes. Second, the investigator explicitly instructed the students in the cognitive steps required for the case analyses, and the students accessed the online template listing the problem-solving steps that scaffolded their thinking processes each time they analyzed a case. Third, students received timely feedback on their analytical reasoning through large group class discussions of each of the cases, as well as personal written feedback on individually graded essays. Finally, students had ample practice analyzing a total of five case studies from pretest to posttest.

Recommendations for Future Research

Replicating the study using a larger sample is recommended. Improving the study with a larger sample would not only strengthen the study's generalizability but would also allow the experimental design to include a third case study learning strategy treatment—small group face-to-face case study analysis. Including this third learning condition would facilitate closer investigation of the distinctive relationships between individual learning, collaborative learning, and online learning.

To further illuminate the effects of the various case study learning strategies on students' critical thinking, the participants may be given the choice of working on the case study learning assignments under their preferred method: individual, small group face-to-face, or small group online discussion. "The major assumption of aptitude-by-treatment interaction research is that it is possible and desirable to adapt the nature of instruction to accommodate individual differences in terms of ability, style, or preference to improve learning outcomes" (Chen,

Toh, & Ismail, 2005).

Another suggestion for future research is to investigate the transfer of critical thinking skills from one domain to another. Is this a skill that needs to be taught in every class or can students transfer the skills from situation to situation?

Using effective instructional design and adequate scaffolding, under-graduate developmental education students can significantly improve their critical thinking skills through case study learning as homework assignments reinforcing course concepts. This may be accomplished through individual case analysis assignments or collaborative online discussions. Perhaps a combination of both strategies is ideal—beginning with individual analysis and progressing to online collaborative analysis as students increase their critical thinking skills and their confidence in analyzing instructional cases.

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Appendix A
Holistic Critical Thinking Scoring Rubric
Facione and Facione

4   Consistently does all or almost all of the following:

   Accurately interprets evidence, statements, graphics, questions, etc.;

   Identifies the salient arguments (reasons and claims) pro and con;

   Thoughtfully analyzes and evaluates major alternative points of view;

    Draws warranted, judicious, non-fallacious conclusions;

   Justifies key results and procedures, explains assumptions and reasons;

   Fair-mindedly follows where evidence and reasons lead.

3   Does most or many of the following:

   Accurately interprets evidence, statements, graphics, questions, etc.;

   Identifies relevant arguments (reasons and claims) pro and con;

   Offers analyses and evaluations of obvious alternative points of view;

   Draws warranted, non-fallacious conclusions;

   Justifies some results or procedures, explains reasons;

   Fair-mindedly follows where evidence and reasons lead.

2   Does most or many of the following:
Misinterprets evidence, statements, graphics, questions, etc.;
Fails to identify strong, relevant counter-arguments;
Ignores or superficially evaluates obvious alternative points of view;
Draws unwarranted or fallacious conclusions;
Justifies few results or procedures, seldom explains reasons;
Regardless of the evidence or reasons, maintains or defends views based on self-interest or preconceptions.

1   Consistently does all or almost all of the following:
Offers biased interpretations of evidence, statements, graphics, questions, information, or the points of view of others;
Fails to identify or hastily dismisses strong, relevant counter-arguments;
Ignores or superficially evaluates obvious alternative points of view;
Argues using fallacious or irrelevant reasons, and unwarranted claims;
Does not justify results or procedures, nor explain reasons;
Regardless of the evidence or reasons, maintains or defends views based on self-interest or preconceptions;
Exhibits close-mindedness or hostility to reason.

Appendix B
Sample of Case Studies
Analyze Student Behavior: ALAN

Suppose you were working at the university's Student Learning Assistance Center as a peer counselor. A student, Alan, comes to see you mid-semester to discuss his problems. Read the brief description of Alan and identify what you have learned to date that could be applied to his situation. What suggestions would you give to Alan related to his current situation? Please justify your suggestions.

Alan is a freshman music major who is an accomplished bass player. He plays with a local band weekly at Cypress Creek Café. He is recognized by his peers as someone with a great deal of talent. His goal is to play

professionally. He practices many hours a day and believes this activity is more worthwhile than taking general education courses. Alan believes he does not need a college education to attain his goal. His parents believe that the attainment of a college degree will benefit him throughout his life. He agrees to go to college to please his parents but is not very interested in some of his courses. As a result, his attendance is poor and his grades are low in English 1310 and History 1310.

Analyze Student Behavior: BYRON

Byron is a first-year college student. He has been fairly lucky so far in that at least he isn't failing any of his classes. He puts in the minimum amount of work possible to try to maintain what he calls "average" performance—no less than a D in any course. But all of this is starting to wear on him; on top of that, he's running out of excuses for his parents.

Byron uses every excuse in the book for not following a study regimen: "I have a photographic memory so I don't have to study and review . . . I'll study over the weekend when I have more time . . . I don't like this course and the professor is so boring . . . I work best under pressure." He once told a professor that he missed the 3:00 class because "My alarm clock didn't go off."

Byron prides himself on the fact that he's been able to pass his classes without purchasing the required textbooks. He's making a "final push" to turn in his late work before his finals. He's had perfect attendance the last few weeks of the semester.

Applying what you have learned in our course thus far, what advice would you give Byron for next semester?

Analyze Student Behavior: FELICIA

Suppose you were working in your college counseling center as a peer counselor. Felicia comes to see you to discuss her academic problems. Read the brief discussion of Felicia and identify what you have learned to date that could be applied to her situation. What three suggestions would you recommend to improve Felicia's academic performance in chemistry? Why?

> Felicia has always wanted to be a pediatrician. She is a freshman majoring in pre-med and is having difficulty in her first chemistry course. Although she did well in her high school chemistry course, she finds her college course more difficult because it is taught differently. The exams require more problem solving and higher level thinking than she experienced in high school. She begins to worry about her ability to excel in the sciences and to obtain admission to medical school.

Analyze Student Behavior: LARA

Read the following information concerning Lara. Consider the strengths and weaknesses of her motivation and learning strategies. What three (3) suggestions do you have to help her perform more successfully and why?

> Lara is studying a chapter in her biology textbook for a quiz the next day. Her experience taking biology in high school was mostly negative because her instructors focused on facts and definitions. As a result, she never developed much interest in the subject. She has been told that she will be asked to answer one essay question to test her knowledge of the material. She is not sure exactly what content will be tested, but decides to develop a study plan to gain a general understanding of the main ideas and to recall the most important facts. She paraphrases each section of the chapter and underlines the most important information. She realizes that she has difficulty comparing and contrasting some of the concepts discussed in class. Therefore, she decides to develop and write responses to short-answer essay questions she thinks may be on the test. She develops so many possible questions that she quickly becomes frustrated and only answers two essay questions. She then reads the chapter summary. Finally, she reviews the underlining in her textbook and decides it is time to move on to another subject.

Appendix C
Case Analysis Template

1. Clearly state the problem.	
2. Identify central issues	
3. Determine relevant and irrelevant information.	
4. Identify any assumptions you are making and determine whether they are justifiable.	
5. Brainstorm and list several strategies for resolution of case.	
6. Rank your strategies above according to importance.	
7. List your top 3 recommendations and present a rationale for each.	

Appendix D

Case Study Learning Assignment Criteria (individual learning)
Case study learning provides you the opportunity to improve your critical thinking skills by applying theory to practice. Assignments are due *before* class begins. Late assignments will be reduced a letter grade per day following the due date.

Procedures
1. Read the case and think about it.
2. Use textbook and lecture notes to consider solutions to problem.
3. Complete online analysis template and print a copy of it.
4. Using your template as a guideline, construct your 5 essay. Your essay will be graded according to Facione & Facione's critical thinking rubric. Refer to template handout. Scoring of a 4 will constitute an A, 3-B, 2-C, 1-D. The range of scores (such as the range of an A, 90%-100%) will depend on the following: your overall assignment presentation, including following all requirements carefully, formatting of cover sheet and essay, as well as correct word choice, sentence fluency, and mechanical correctness (spelling, grammar, usage, and punctuation).

Criteria (to be handed in)
Cover Sheet
Analysis template
Essay (5), typed, double-spaced, and free of errors
   I. Introduction
       A.   Clearly state the problem.
       B.   Identify the underlying causes and overt symptoms of the problem.
       C.   Identify any assumptions you are making w/ justification for each.
       D.   List your top 3 recommendations.
   II. First recommended strategy
       A.   Present rationale.
       B.   Discuss consequence(s) of strategy implementation.
   III. Second recommended strategy
       A.   Present rationale.
       B.   Discuss consequence(s) of strategy implementation.
   IV. Third recommended strategy
       A.   Present rationale.

    B.   Discuss consequence(s) of strategy implementation.
 V. Conclusion
    A.   Summarize, restate, or evaluate the information presented.
    B.   Direct the reader to a larger concept.

  I encourage you to make an appointment with the university's writing center if you need any type of assistance with composing, proofreading, and/or editing your essay.

Case Study Learning Assignment Criteria (online collaborative)
Case study learning provides you the opportunity to improve your critical thinking skills by applying theory to practice. Assignments are due *before* class begins. Late assignments will be reduced a letter grade per day following the due date.

Procedures
1. Read the case and think about it.
2. Use textbook and lecture notes to consider solutions to problem (consider MSLQ categories under skill and will).
3. Complete online analysis template (before online discussion) and print copy of it.
4. Discuss case (steps #1-4) with small group via Blackboard using thread labels to navigate through discussion (a minimum of 3 postings per step over a minimum of 2 different times = 6 total contributions; each time = 1 original + 1 response to peer).
5. Sort and print your forum contributions after second participation.
6. Annotate template w/additional ideas or revisions following discussion (handwritten).
7. Construct 5 essay. Essay will be graded according to Facione & Facione's critical thinking rubric. Refer to template. Scoring of a 4 will constitute an A, 3-B, 2-C, 1-D. The range of scores (such as the range of an A, 90%-100%) will depend on overall presentation of assignment, including following all requirements carefully, formatting of cover sheet and essay, as well as correct word choice, sentence fluency, and mechanical correctness (spelling, grammar, usage, and punctuation).

Criteria (to be handed in)
- a. Cover Sheet
- b. Analysis template w/post-discussion handwritten annotations
- c. Printed contributions to discussion forum
- d. Essay (5) typed, double-spaced, and free of errors

- I. Introduction
    - A. Clearly state the problem.
    - B. Identify the underlying causes and overt symptoms of the problem.
    - C. Identify any assumptions you are making w/ justification for each.
    - D. List your top 3 recommendations.
- II. First recommended strategy
    - A. Present rationale.
    - B. Discuss consequence(s) of strategy implementation.
- III. Second recommended strategy
    - A. Present rationale.
    - B. Discuss consequence(s) of strategy implementation.
- IV. Third recommended strategy
    - A. Present rationale.
    - B. Discuss consequence(s) of strategy implementation.
- V. Conclusion
    - A. Summarize, restate, or evaluate the information presented.
    - B. Direct the reader to a larger concept.

I encourage you to make an appointment with the university's writing center if you need any type of assistance with composing, proofreading, and/or editing your essay.

Dr. Kathryn Lee is currently an Assistant Professor in Curriculum and Instruction at Texas State University–San Marcos. She has been in education and the mental health field in Texas for over 20 years. Her experience as a secondary school teacher, a clinical therapist, and a school counselor for both elementary and secondary students underpins her basic philosophy that we must be responsive to individual student needs in the classroom. Her current emphasis as a teacher educator is preparing pre-service secondary teachers to be empathic and responsive to all students' needs, including those students who are routinely marginalized because of their ethnic minority status, language, gender, low socio-economic status, religious belief, and/or sexual orientation. Dr. Lee's primary research interest lies in responding to diverse student needs through student-centered instructional strategies in higher education.