

2007-08 Campus-Wide Assessment Report for General Education Competencies

compiled by Kate Lynn Hibbard, Interim Assessment Co-Coordinator

MCTC faculty members who participated in the Critical Thinking Caucus and/or other assessment projects this year include Peggy Andrajack, Hafed Boussad, Tom Bridigum, Sarah Clowes, Lynn Coffey, Valerie Deus, Kathleen DeVore, Troy Dvorak, Lori Engel, Jenifer Fennell, Rekha Ganaganur, Shannon Gibney, Linda Green, Jane Gringauz, Haile Haile, Ranae Hanson, Ginny Heinrich, Brian Heller, Craig Hergert, Jeremy Hovda, Jake Jacobson, Jennifer Jakubic, Vicki Johnson, Michael Kissin, Katherine Kragtorp, Michael Kuhne, Erica Lam, Jane Leach, Phil Martin, Catherine Miller, Jay Miskowiec, Diane Nelson, Cheryl Neudauer, Matt Palombo, Jeff Paulus, Elizabeth Pauly, John Plomondon, Melissa Reid, Perry Ruedy, Linda Russell, Cia Sauter, Michael Seward, Steve Skoro, Greg Skudlarek, Doug Texter, Yolanda Williams, Morgan Willow, Corey Woosley, and Carissa Wyant

Other MCTC community members contributing valuable leadership, insight, and expertise were Lois Bollman, Irene Kovala, Diane Nelson, Linda Reed, Michael Seward, and Elizabeth Yeh. Special thanks go to Michael Kuhne, Cheryl Neudauer, and Perry Ruedy. Without their support, this work would have been impossible.

Table of Contents

I. Activities	4
Embedded Critical Thinking Assessments	4
College-wide Assessment of Critical Thinking	4
Training in Assessment	4
<i>Purpose of the Critical Thinking Caucus</i>	5
<i>Purpose of Faculty Development Sessions focused on Assessment</i>	5
<i>Purpose of Other Training</i>	5
Beyond MCTC	5
<i>AQIP</i>	5
<i>Conferences</i>	5
II. Recommendations	6
Embedded Critical Thinking Assessments	6
College-wide Assessments of Critical Thinking	6
Faculty Development Sessions	6
Academic Council	6
Beyond MCTC	7
III. Goals	7
IV. Moving Forward	9
A Brief Overview of Assessment	9
Recommendations for the Next General Education Competency	11
Moving Forward with Assessment at Minneapolis Community and Technical College: Support from the Literature , by Cheryl Neudauer, member, HLC Conference Team	13
V. A Closer Look Back	22
Significance of the Reports, Embedded Critical Thinking Assessment Project	22
Assessing Embedded Critical Thinking Assignments: Participants, 2007-2008	24

Embedded Critical Thinking Assignment Reports	27
<i>Sarah Clowes</i>	27
<i>Rekha Ganaganur</i>	31
<i>Jane V. Gringauz</i>	50
<i>Haile K. Haile</i>	54
<i>Ranae Hanson</i>	57
<i>Virginia Heinrich</i>	61
<i>Kate Lynn Hibbard</i>	67
<i>Jennifer Jakubic</i>	73
<i>Michael Kissin</i>	78
<i>Erica Lam</i>	83
<i>Jay Miskowiec</i>	89
<i>Diane Nelson</i>	94
<i>Cheryl L. Neudauer</i>	99
<i>Elizabeth Pauly</i>	105
<i>Melissa Castino Reid</i>	113
<i>Perry Ruedy</i>	122
<i>Greg Skudlarek</i>	125
<i>Yolanda Y. Williams</i>	129
<i>Cory Woosley</i>	136
<i>Carissa Wyant</i>	144
Faculty Survey of Critical Thinking Practices at MCTC, May 2008	149

I. Activities

Embedded Critical Thinking Assessments

Twenty instructors from across 15 fields (10 Liberal Arts and 5 Technical/Career) attended monthly training sessions on designing assignments and assessments of critical thinking in their regular curriculum. They assessed 649 student performances in Critical Thinking in 20 different courses, with 70% of the scored samples being rated at College Level or higher:

	# students completing tasks	Below college level		College level		Superior	
Totals:	649	198	30%	254	40%	197	30%

An additional 93 students were given the assignments but failed to complete the tasks. If these incompletes are included in the results, then the final numbers are as follows:

		# not completing	% not completing	# Below	% Below	# at CL	% at CL	# Superior	% Superior
Totals:	742	93	12%	198	27%	254	34%	197	27%

College-wide Assessment of Critical Thinking

A sample of 166 MCTC students who had completed at least 24 credits at MCTC took the College Assessment of Academic Proficiency (CAAP), a nationally standardized test in Critical Thinking. Overall, our students scored slightly above the national average of students taking this test, with a mean score of 62.3 vs. 60.9 respectively. Subsets of the sample (African American students and ESOL students) scored slightly below the national average, with mean scores of 56.4 and 55.7 respectively. Students in health-related fields scored above the national average, with a mean score of 61.3

Training in Assessment

Activity	Dates	# of participants	# of Training Hours Provided	# of Person-Hours of Training Rec'd
Faculty Development Sessions	August 22	7	1	7
	April 2	150	1.5	225
	May 15	12	1	12
	May 16	29	2	58
Individual and Group Training	Embedding Projects	Monthly, spring	19	190
	Academic Council forms	Ongoing	4	8
	Program Assessment	Ongoing	4	8
	New Courses	Fall	4	8
Critical Thinking Caucus	Monthly, fall	13	10	130
TOTALS		242	31.5	646

Purpose of the Critical Thinking Caucus

- to foster connections among liberal arts, career, and technical fields
- to find out how to help meet the needs of other faculty
- to discuss what college level critical thinking means
- to promote teaching and assessment of critical thinking across campus
- to disseminate tips that will work in any course
- to discuss implementation of the CAAP exam
- to refine the embedding process

During the spring semester, the Caucus stopped meeting formally as its function was assumed by the Critical Thinking Embedding Project.

Purpose of Faculty Development Sessions focused on Assessment

Faculty Development sessions were developed based on recommendations from the Caucus to

- provide training in writing and using rubrics (August 2007)
- demonstrate the CAAP test and discuss the role of standardized testing in assessing critical thinking (April 2008)
- share the achievements of the critical thinking embedding projects and attract new members (May 2008)
- determine faculty practices and needs regarding teaching and assessing critical thinking via a written survey and facilitated discussions (May 2008). This session was supported by funds from a Faculty Award of Excellence.

Purpose of Other Training

- to assist faculty coming before the Academic Council with new or altered course assessment plans
- to assist program coordinators and faculty with program assessment planning
- to assist members of new faculty teaching circle with assessment planning

Beyond MCTC

AQIP

In the Fall an AQIP Action Update on the Communication Assessment Action Plan was completed and submitted. MCTC continues to receive positive comments from AQIP about our work with assessment.

Conferences

- A team of four faculty attended a national conference of the Higher Learning Commission to develop a plan for assessing the next two general education competencies.

- A team of two faculty attended the Innovation and Inquiry for Student Learning conference, an initiative of the Lumina Foundation, to share and learn best practices in assessment among other comparable higher education institutions.

II. Recommendations

Embedded Critical Thinking Assessments

This project is perhaps the most valuable part of the assessment plan at MCTC and should be continued. Participants, particularly part time faculty, appreciate the interdisciplinary environment and the chance to think about teaching and learning in a meaningful way. The small stipend helps to attract new participants and shows them that the institution values their commitment. Efforts should continue to involve faculty from a wide variety of liberal arts, technical, and career programs.

College-wide Assessments of Critical Thinking

The CAAP test proved to be extremely difficult to administer due to stringent time, space, personnel and eligibility requirements imposed by American College Testing. Despite offering a financial incentive for participants, extending the period of the test through the first month of summer term, and scheduling 25 different exams, we did not achieve the target of 200 test subjects. If this test is administered again, it should be done within the context of regularly scheduled classes. If faculty are given sufficient lead time to plan the test into their curriculum, similar to other assessments of course effectiveness and student satisfaction currently in place at MCTC, a larger and more varied sample of students will be reached with a more effective use of staff time.

Faculty Development Sessions

Topics for sessions should continue to be generated in tandem with the Competency Caucus while keeping in mind the overall institutional goals for assessment. Scheduling sessions for all full-time faculty during the April Development Day was an excellent way to raise the profile of the assessment program. The survey project in May reached faculty in a number of disciplines which have never been involved before in assessment; this was probably due to two factors: convenience of meeting during Faculty Development Days, and the small stipend for participating. These practices should continue. To make this work more meaningful, it would be useful for the next Assessment Coordinator to report back to faculty how the concerns they have raised at these trainings are being addressed specifically by the institution.

Academic Council

Assessment co-coordinators continued to sit on the Academic Council and were available to work with proponents throughout the process of proposing and altering courses. Although some proponents took good advantage of their support, many others did not. As the Academic Council continues its move to electronic submissions, involving assessment in the process should become more automatic.

Beyond MCTC

MCTC should continue in efforts to expand its impact to model its effective practices and become known for its excellence in assessment by working with other MnSCU campuses, presenting our model at regional and national meetings, and participating in relevant conferences.

III. Goals

The four goals for 2007-08 laid out in the fall of 2006 by (then) Assessment Co-Coordinators, in conjunction with the Vice President for Strategy, Planning and Accountability, were achieved:

1. Embed the assessment of critical thinking skills into 20 courses. Instructors were identified for 30 courses but did not complete the project.
2. Conduct college-wide, nationally-normed critical thinking assessment of representative sample of students. The data still needs to be contextualized and shared with the campus community.
3. Continue instructor-training in critical thinking skills. Faculty Development sessions are an effective and efficient way of reaching new faculty and communicating the importance of assessment to improving student learning at MCTC.
4. Continue working through Academic Council to assist instructors in developing critical thinking assessment tools for their courses

FY	Goals	Revisions	Plan	Additional Activities
2007-08	<p>Embed the assessment of critical thinking skills into 20 courses</p> <p>Conduct college-wide, nationally-normed critical thinking assessment of representative sample of students</p> <p>Continue instructor-training in critical thinking skills</p> <p>Continue working through Academic Council to assist instructors in developing critical thinking assessment tools for their courses</p>	<p>Embed CT assessments into 30 courses</p> <p>Administer CAAP to representative sample of sophomores</p> <p>ADD: Increase MCTC's impact regionally and nationally</p>	<p>Find funding</p> <p>Convene Caucus</p> <p>Train instructors embedding assessments</p> <p>Conduct college-wide assessments</p> <p>Establish means of interpreting, contextualizing and disseminating results</p> <p>Offer FD workshops</p> <p>Work w/AC, FD, MSCF</p>	<p>Work with instructors teaching New/Altered courses</p> <p>Participate in Lumina project via Alverno</p> <p>Possibly participate in HLC Academy and FIPSE grant</p> <p>If funding found, train Advocates in May</p> <p>Work with Union and administration to establish mechanism for using FD funds for Assessment activities</p> <p>Submit new Gen. Ed. language to AC</p> <p>Work with IT and AC to create database and digital forms.</p>

FY	Goals	Revisions	Plan	Additional Activities
				Complete AQIP requirements Present at conferences Work with MnSCU colleagues

To complete the 3 Year Critical Thinking Plan, goals and plans were set for the next year, with revisions and activities added:

FY	Goals	Revisions	Plan	Additional Activities
2008-09	Embed the assessment of critical thinking skills into 30 courses Conduct college-wide, nationally-normed critical thinking assessment of representative sample of students Continue training in critical thinking skills Continue working through Academic Council to assist instructors in developing critical thinking assessment tools for their courses Possibly revise Competency language	Embed CT assessments into 40 courses Administer CAAP to representative sample of sophomores; compare results from previous year ADD: Increase MCTC's impact regionally and nationally	Find funding Convene Caucus Train instructors embedding assessments Conduct college-wide assessments Establish means of interpreting, contextualizing and disseminating results Offer FD workshops Work w/AC, FD, MSCF	Work with instructors teaching New/Altered courses Participate in Lumina project via Alverno Possibly participate in HLC Academy and FIPSE grant If funding found, train Advocates in May Work with Union and administration to establish mechanism for using FD funds for Assessment activities Work with IT and AC to create database and digital forms Complete AQIP requirements Present at conferences Work with MnSCU colleagues

Goals beyond 2008-2009 will be set by the forthcoming Assessment Coordinator with the Vice President for Strategic Planning and Accountability to account for a reorganization of the assessment program and its coordination function.

IV. Moving Forward

A Brief Overview of Assessment

Assessment at MCTC reflects steady growth and commitment from key stakeholders across campus. Since Fall 2002, our program has focused on assessing student learning across the curriculum through various aspects of our four general education competencies: Communication (including reading, speaking, writing, and information literacy), Critical Thinking, Social Responsibility, and Personal Responsibility. This year we are in the second year of a planned three-year focus on Critical Thinking.

Faculty and administration comprise a comprehensive institutionalized student learning assessment model:

- Programs and divisions develop and implement an annual assessment tool that examines specific courses and/or skills while gathering data about student learning. As new courses are developed and proposed, assessment of course effectiveness must be part of the proposal. Specified days are set aside for program level assessment activities, and a summary of each program or division's assessment activities are included in an annual Program Review.
- The Academic Council, which includes faculty and administrators, is the body that oversees curriculum change at MCTC. The AC requires every new course proposal to have course, program and college assessment tools embedded into it. They are responsible for assuring that students gain mastery of both course skills and college competencies.
- Two faculty members receive release time to coordinate faculty involvement with assessment. Reporting to the Office of Strategic Planning and Accountability, the Assessment Co-Coordinators are the liaisons between administrators, programs, and individual faculty assessment efforts. One of their charges is to develop new models and strategies for assessment based upon data collected. For example, over the past five years, one Assessment Co-Coordinator has overseen the Embedded Assessment project, where individual faculty design assignments for their own classrooms and collect data to assess student learning in an identified competency area, then share these results with other faculty. Assessment Co-coordinators also sit on the Academic Council and help programs/divisions and instructors with new course assessments. They assist programs/divisions to develop annual assessments. They sit on the Faculty Development Committee and offer group and one on one assessment training. They chair Competency Caucuses and submit an annual report on program and Caucus assessment activities to the Academic Council as well as to the greater campus community.
- The Faculty Development Committee offers sessions on specified days that address issues of assessment and the embedding of competencies. They channel funds and

provide expertise on assessment to all programs/divisions, provide individual instructors assistance on improving classroom assessment, bring in outside experts on issues of assessment, and respond to the self-identified assessment needs of individual instructors and divisions.

- Competency Caucuses are groups of faculty charged with designing and implementing college-wide assessment tools that address how well the college is helping students master its core competencies. The Caucuses use these data to propose and implement institutional changes to improve student learning. Members work with Faculty Development, train in-house experts to run sessions on assessment, and assist faculty in implementing innovative changes in improving student learning.
- The college administration provides meaningful support for campus assessment in a number of ways. They provide release time for Assessment Co-Coordinator, assign Institutional Research personnel to support assessment work, require the deans to evaluate program assessment efforts annually, devote designated professional development days to assessment work, fund college-wide assessment projects, fund individual faculty stipends for classroom assessment projects and training sessions, and via AQIP and the college's Strategic Directions, identify assessment as an institutional priority.

Results of campus-wide assessment projects are shared via an annual report that is e-mailed to all faculty and administrators and made available on the campus shared computer drive. An executive summary of results is presented to the presidential cabinet. At the end of the communication competency assessment period, the Competency Caucus distributed rubrics to assess communication skills to all faculty across campus. In the remaining year of the critical thinking assessment period, we will use results from a national standardized test, faculty interviews and classroom embedding projects to propose curriculum change at the college level.

Assessment efforts at MCTC seem to be at a healthy stage of growth. The faculty, particularly at the individual classroom level, are increasingly knowledgeable, receptive and enthusiastic about participating.

Recommendations for the Next General Education Competency

Our current assessment model was developed to address two general education competencies that have clear correlations to many academic courses. It is fairly obvious that successful communication skills are a requirement for student learners; critical thinking is also a crucial element of most, if not all, college-level classes. Conversations about classroom level assessments of communication have produced some excellent rubrics that have been shared and utilized by faculty across the campus. However, our two remaining competencies, social and personal responsibility, are not so clear cut. The next task for assessment is to develop a clearer understanding of how to define and assess social responsibility at a faculty, classroom, program, curricular, and college level.

The model used for refining the critical thinking language is a good one to use in defining social/personal responsibility. A mutually determined definition will make it possible to develop assessable outcomes. Once there is a clear plan to define and assess social/personal responsibility, there needs to be a plan to use that information to make meaningful improvement in student learning, keeping in mind that the activity of faculty assessing their teaching in and of itself should lead to some improvements in student learning, though these improvements may not be sufficiently quantifiable to satisfy the institution's needs for reporting assessment results.

Since there are four Goal Areas in the Minnesota Transfer Curriculum that are related to Social/Personal Responsibility (Human Diversity, Global Perspective, Ethical and Civic Responsibility, People and the Environment), it may be useful to focus specifically on courses in one of these areas each year.

Recommendations for new stakeholders to involve in the assessment effort include

- Center for Civic Engagement
- Office of Service Learning
- Global Studies
- Student Life
- Student Senate

In terms of standardized instruments, some of our colleagues at other MnSCU schools have experience administering both national and locally developed instruments to measure cultural competency. Century College has used the Intercultural Development Inventory, while Inver Grove Heights has developed its own survey. A pre and post test of students taking courses that assess social/personal responsibility could be a useful starting point.

Other recommendations include connecting our college's commitment to controlling its climate emissions, a key element of global awareness, to assessment, and developing collaborative courses or projects among programs (for example, English, Carpentry, and Graphic Design) to promote social/personal responsibility, while building assessment into that model.

The next level of assessment should focus on

- models, especially cross-disciplinary models, from other institutions, ideally ones that are similar to our diverse, urban community college, including specific strategies for assessing competencies that move beyond an easily identified course skill
- ideas for continuously modeling assessment on a program/division level, and increasing knowledge and enthusiasm for “the big picture” – i.e., seeing the vital and necessary connections among individual, program level, and institution-wide assessment of student learning.
- ideas for making this, and all assessments, matter – connecting it to objectives at the individual, program/division, and institution level; making sure that data are used to make meaningful change.

Moving Forward with Assessment at Minneapolis Community and Technical College: Support from the Literature

by Cheryl Neudauer, for the HLC Conference Team

Minneapolis Community and Technical College has been working with the Higher Learning Commission of the North Central Association of Colleges and Schools for accreditation through the Academic Quality Improvement Program (AQIP). As a part of this effort, the college has been assessing the college's four general education competencies in three-year cycles. From 2003 to 2006, MCTC assessed communication. The college is now in the second of three years for assessing critical thinking. The college is now looking forward to starting the assessment of social responsibility in 2009. This paper will outline recommendations for moving forward with this assessment, using the literature to support the recommendations.

During the assessment of communication, a faculty committee met to write rubrics for written and oral communication. These rubrics were then used on writing samples in selected courses and for embedded assessments of written and oral communication.

Before assessing critical thinking, faculty wanted a better idea of what it meant in the various disciplines. Therefore, at the start of the assessment project, the assessment committee elicited input from all of the disciplines, and the definition was re-written. The committee also chose a multiple-choice standardized test, the Collegiate Assessment of Academic Proficiency (CAAP) - critical thinking module to be administered in years two and three. This assessment measures "general cognitive skills that cut across disciplines" and "measures learning that is common, multidisciplinary, and university wide" (Voluntary System of Accountability, 2008, p. 2). This test measures analytic reasoning skills such as clarifying, analyzing, evaluating, and extending judgments (Millett, 2007). It is "designed to evaluate college-level learning outcomes and institutions' general education programs as a way to inform educational interventions and curricular enhancements" (Millett, 2007, p. 11). It allows for comparisons to national reference groups and norms based on institutional type (Millett, 2007). However, this standardized assessment "should complement, not replace assessments that are grounded in disciplines or focused on assessment of general education" (Voluntary System of Accountability, 2008, p. 2). Therefore, faculty were recruited to embed assessments in their classes, where they chose an assignment, wrote a rubric, defined "below college level," "college level," and "above college level" individually, and reported their results to the administration.

Faculty are now in the planning stages to assess the next competency, social responsibility, starting in 2009. Then, the college would move on to assess the last competency, personal responsibility/life skills. It is our recommendation that as the college moves forward, efforts on these two competencies be combined, at least in the early stages of defining these terms and determining what is already being done at the college (see below) to avoid repeating efforts. These student-learning outcomes should be assessed more frequently than our current three-year/twelve-year cycle, preferably annually or every other year (Dwyer, 2006; Walvoord, 1988; Wellman, 1999). Therefore, it is also recommended that the college continue assessing communication and critical thinking as the college moves forward. Combining the assessment of social responsibility with personal responsibility/life skills will begin this effort, and

incorporating communication and critical thinking will make this an ongoing assessment for all four of these competencies.

Assessing social responsibility and personal responsibility/life skills provides some challenges. First, the college is moving from clearly recognizable outcomes (communication, critical thinking) to more amorphous competencies. Some may view these as “too values laden to be safe” (Wellman, 1999, p. 17). Second, there are widely-accepted standardized exams for communication and critical thinking. Also, these competencies fall under the “workforce readiness and general education skills” domain of student learning (Dwyer, 2006). Social responsibility and personal responsibility/life skills would likely fall under the “soft skills” domain of knowledge which is described as non-cognitive; however, some skills under these competencies may fall under cognitive skills (e.g., the ability to communicate with a diversity of people and view multiple political perspectives, etc.). Likely, assessments will measure both cognitive and affective (e.g., attitudes and involvement) skills (Wellman, 1999, p.13).

The recommendation is that the college learns from our best practices during the assessment of communication and critical thinking by starting with defining what social responsibility and personal responsibility/life skills mean for the disciplines and writing assessable outcomes. Internal and external stakeholders should be involved in these conversations. It is recommended that while working to define outcomes, the college collect information about what is already being done at the college in these areas. Since these areas can be checked on course documents that go through Academic Council, it is recommended that courses, instructors, outcomes, and assessments be compiled by examining these documents. Then, the college should identify or develop and use both standardized assessments to allow for comparisons and accountability and locally-developed assessments (e.g., embedded assessments) to help improve teaching and student learning. The college should also examine its commitment to assessment of these competencies and determine how the data will be analyzed, reported, and used to make decisions.

The first step for assessment is for the college to determine who should participate in the assessment efforts (Millett, 2008). The assessment should be college wide, and job assignments should be clearly defined (Wellman, 1999). There should be explicit support from all levels of administration. The college needs to determine how much of a priority these competencies and their assessment are to the college and external stakeholders (Wellman, 1999). Since assessment adds to faculty workload, there should be compensation for this workload, the assessment plan should acknowledge and incorporate what faculty are already doing (Walvoord, 1988), and the efforts should be faculty driven. The assessment should not only include outcomes linked to the classroom. Since student development during college is greatly influenced by what happens outside of the classroom (Pascarella, 1991), assessment should also focus on campus-life activities (Wellman, 1999) and how college services and opportunities affect the outcomes. Assessment efforts should involve college staff and administrators; involving the Student Life Director would be a first step. Finally, students should be involved in the assessment planning and activities, for example, by including the Student Senate

The next step is to write the student learning outcomes (Dwyer, 2006; Millett, 2008, Wellman, 1999). The definitions for social responsibility and personal responsibility/life skills should be

stated so they can be communicated to stakeholders and so instructors can understand, measure, and improve them (Walvoord, 1988). This will clarify the outcomes and questions for faculty, administrators, and stakeholders (Millett, 2008). These outcomes should be tied to the mission and vision of the college (Millett, 2008 and Wellman, 1999) and tied to existing literature and educational development theory. For this step, the college can follow a similar process used to define critical thinking and associated skills. This will promote discussion about these competencies (Wellman, 1999) and how they can be incorporated and improved in the classroom. The college needs clarity about terms and outcomes before beginning assessment (Wellman, 1999). While developing terminology, rubrics/item scoring criteria, performance-level descriptors (PLDs), etc., the college should employ focus groups, workshops, and committees with discussion of the mission (Walvoord, 1988), general education competencies, transfer curriculum and their histories. “One must be able to define something in order to assess it” (Walvoord, 1988, p. 176). These conversations will allow the college to explore what it means to be socially responsible, personally responsible, and have life skills, as these are currently poorly understood (many faculty and students cannot name these as general education competencies). A caveat of this strategy is spending too much time defining the competencies to satisfy all stakeholders yet being specific enough to identify assessable outcomes (Walvoord, 1988).

While the college defines these competencies and outcomes, they should also review the history of these competencies, how they are tied to the mission of the college, and how they correlate with the Minnesota Transfer Curriculum distribution requirements. This will help to clear up the confusion about the language. It will also foster conversation about these to make all college personnel and students aware of these college priorities.

The college should also define and communicate how it plans to use the data. Will the data be used for external accountability and/or for comparisons to other institutions? Or, is the main objective to improve student learning? (Millett, 2008) How much does the college already know about student learning at MCTC? What can the college infer from existing data? How much data does the college need to share with stakeholders? (Millett, 2007) Which data are needed to support the college’s outcomes? (Millett, 2008 and Walvoord, 1988) How will the data be analyzed and presented? (Walvoord, 1988). Who will do it? What institutional support is available? How will results be tied to institutional goals and be used by decision makers? (Millett, 2008) Based on the current climate of accountability (COEI) and the accreditation process, the external accountability will need to be satisfied. To gain faculty buy in, participation, and commitment (Walvoord), there will need to be a focus on student learning. “It is not uncommon on many campuses to have some ongoing data-collection activities that produce annual reports, but generate few, if any, actions. It is reasonable to assume that this pattern of generating reports without associated actions has led to a great deal of faculty skepticism about the utility of student learning outcomes data” (Millett, 2008, p. 13). The college needs to communicate with stakeholders about how data will be used internally and externally and how these data will be used to improve student learning.

While the college is defining these competencies and writing outcomes, the college should conduct an internal “audit” to determine what is already being done at the college (Millett, 2008 and Walvoord, 1988). “The best place to start is by asking questions such as these: What kinds of

statements would the college like to be able to make about students' learning? What evidence of student learning does the college already have (e.g., portfolios), and what conclusions can be drawn from these data? What inferences about student learning can the college draw from existing evidences, and how can the college support and supplement these inferences with data from new assessments?" (Millett, 2007, p.8)

It is recommended that the Academic Council papers be reviewed to compile a list of courses which address these competencies as well as the student learning outcomes and assessments listed on these forms. The information from this audit should be used to identify common terminology and categories of learning (Walvoord, 1988). New course evaluation reports should also be examined to compile existing data on these competencies. The instructors of these courses should then be contacted to gather further information about existing efforts, outcomes, assignments, rubrics, assessments, and data. These instructors should also be recruited for assessment committees or focus groups.

In addition, the Service Learning Coordinator, the Center for Civic Engagement, and the Power of You program should be contacted to determine what efforts and data they currently have. Members from these groups should also be recruited for the assessment committee or focus groups.

The next step is to define which additional data and assessment efforts will be needed. This will be based on how the college plans to use the data (Millett, 2008). It may be useful and strategic to engage a qualitative researcher to help analyze existing data (Walvoord, 1988) and plan for collection of additional data. During the development of the assessment strategy, the college should seek reviewers not directly involved to provide feedback during the stages of development (Wellman, 1999).

The college should also engage in discussions with internal (e.g., administration, faculty, staff, students) and external (e.g., governing boards, businesses, community leaders, elected officials) stakeholders to determine the interest and priority in teaching social responsibility and personal responsibility/life skills. The main players are political, the academy, citizens, and employers (Dwyer, 2006). For this, the college could use focus groups, advisory panels, and/or questionnaires to determine how they feel and think about these issues; their perceptions, values, and level of priority; and what language they use to talk about them. If these general education competencies are not external priorities, the public will hold the college to other standards (e.g., graduation rates). These conversations may help stakeholders see the social benefits, for example, of students becoming more effective citizens and serving the public interest (Wellman, 1999)

There needs to be clear leadership commitment to the assessment of these competencies, starting with the president, although this involvement does not need to be direct. These competencies need to be priorities, or it is not worth proceeding with their assessment. The assessment agenda needs to involve academic and financial vice presidents, faculty, staff, and students and should be linked to governing boards and community leaders (Wellman, 1999).

The college will need to determine if they plan to assess (1) cognitive skills of student learning [e.g., civic education (Wellman, 1999) such as students' understanding of citizenship or the political process (Gottlieb, 2002) including critical thinking skills such as the ability to see multiple perspectives], (2) affective skills such as attitudes [e.g., compassion, willingness to get involved (Gottlieb, 2002)], and/or (3) involvement [e.g., institutional service roles (Wellman, 1999), hours spent on community service]. Often, indirect measures (e.g., campus climate) are used when assessing outcomes such as civic contribution (Wellman, 1999), and the college will need to decide whether to follow this trend and/or collect other data. The choice of the instrument and assessment strategy will depend on which of these outcomes are priorities to the college and other stakeholders (Wellman, 1999). An assessment strategy should be selected to align with student outcomes for which the college is held accountable (Dwyer, 2006) and are central to the colleges mission (Dwyer, 2006; Millett, 2008, Walvoord, 1988; Wellman, 1999). Institutions such as community colleges also need to respond to community needs, for example, by providing non-traditional students with educational opportunities. Therefore, these institutions may select assessments of skills and knowledge over time to demonstrate gains compared to other institutions (Dwyer, 2006).

As the college is defining these competencies and collecting information about existing college efforts, they should also examine the availability of existing standardized instruments. Previous external work in this field should be identified. Some possibilities include: Alexander Astin's research on learning outcomes (Pascarella, 1991 and Wellman, 1999), the Campus Climate Assessment Instrument from the California Postsecondary Education Commission (Wellman, 1999), the "assessment instrument for the engaged students" from the National Center for Higher Education Management Systems (Wellman, 1999, p. 21), or the "models to measure dimensions of citizenship" from the Walt Whitman Center for the Culture and Politics of Democracy (Wellman, 1999, p. 23). Other instruments to measure soft skills are under development; these include Educational Testing Service's Ready Edge, ACT's WorkKeys [assesses "workplace readiness and necessary job-related skills" and measures "a student's proficiency in applying foundational skills to employment situations (Millett, 2007, p. 16)], The Canadian Foreign Service Institute's Situational Judgment Assessment (Millett, 2007), and the Community College Survey of Student Engagement (CCSSE) ["measures community and technical college students' engagement in their educational experiences via items assessing institutional practices and student behaviors" and "can be used to expand educational experiences that have been associated with institutional effectiveness and student learning, persistence, and attainment." This assessment "measures perceptions and self-reported behaviors rather than knowledge and skills" and the benchmarks ("Academic Challenge, Active and Collaborative Learning, Student-Faculty Interaction, Support for Learners, and Student Effort") "consist of sets of items addressing student behaviors and institutional practices that empirical research has identified as contributors to student learning, persistence, and personal development" (Millett, 2007, p.20).

It is recommended that the college continue with its current model of using a standardized test so data can be used for comparison to similar institutions and for external reporting (Millett, 2007). In addition, the college should also continue using locally-developed instruments to maintain faculty participation, increase faculty buy in, and improve classroom teaching and student learning (Millett, 2008 and Walvoord, 1988). MCTC could work with similar institutions (e.g., other metro MnSCU community colleges) to develop a local instrument and assessment which

could be implemented in classrooms and used to compare these institutions and to help build public support of these competencies (Wellman, 1999). Only standardized assessments can allow for comparisons to peer institutions in order to guide curriculum development and institutional planning. To use the assessment for accountability, the college needs to make appropriate comparisons (e.g., control groups with no college courses or vs. other peer institutions) and conclusions (Dwyer, 2006). The college should also define its peer institutions and ascertain which data are available from their assessment efforts. The instrument should allow for the college to determine how well it is contributing to student learning compared to peer institutions. However, the assessment tools will only be valid and useful if aligned with the college's defined outcomes (Millett, 2008)

For the standardized testing, the college should review its previous experience using CAAP. For example, is the college able to use the data to improve student learning? Was the college able to test a representative sample? Are the results reliable if students did not have a stake in the testing? Are there ways to improve the sample, timing, incentives, and methods of testing? Can the assessment be performed as a part of their placement testing to collect data as students enter the college? Can the college gather data about the effect of MCTC on student learning by tying an assessment to a student's intent to graduate? Should future assessments measure campus climate (e.g., CCSSE), student attitudes and involvement (e.g., activities to serve the community), or student learning outcomes (e.g., education of students to be effective citizens) (Wellman, 1999).

For locally-developed assessment, the college should use our mission and new general education definitions and previous data to write an assessment. This would allow for faculty control and institutional flexibility (Dwyer, 2006). It is "essential that representatives from the faculty be integrally involved in the definition of the skills and abilities to be measured and in the development of the assessment tools"; however, "this does *not* mean that the faculty needs to be responsible for the creation of measures, or that there be unanimous agreement among faculty as to what the exact skills and knowledge bases are that will be assessed." (Dwyer, 2006, p. 23).

One recommendation would be to define a manageable number (e.g., five to ten) of indicators to be assessed over time (Wellman, 1999) and to write performance-level descriptors (PLDs) and rubrics so faculty could use these for embedded assessment. To continue to collect data about communication and critical thinking, it is recommended that some of these indicators continue to assess these competencies. Faculty could then choose which assignment to assess with the college-wide rubric and tie to grades to increase the stakes for students, and they could be used to close the loop to improve teaching and student learning. This approach would allow for comparisons between classes. If these tools are developed with similar institutions, they could also be used to make comparisons and for external reporting..

It is recommended that a locally-derived assessment be used for a variety of reasons. The college's general education competencies are primarily taught within the disciplines. Therefore, their assessment should be context specific, within classes, and tied to the mission of the college (Dwyer, 2006; Millett, 2008; Walvoord, 1988; Wellman, 1999). The assessment should be within a course, part of the grading in the courses, and reflective of the college's culture and resources (Dwyer, 2006). The assessment plan should "acknowledge what faculty are already

doing” (Walvoord, 1988, p. 150). This will increase faculty commitment and buy in, and it is more cost effective. The purpose should not be to get faculty to increase assessment, but to systematically examine teaching and learning of the general education competencies and help to improve them. This will also allow in-class assessments to be analyzed and shared internally and externally (Walvoord, 1988). Comparing to other institutions will allow the college to examine whether students were “exposed to an appropriate curriculum,” students were “given clear notice of what is expected of them,” and whether “faculty have appropriate grading policies in place” (Dwyer, 2006, p. 23).

During the assessment of critical thinking, embedded assessment data using locally-developed rubrics were reported as “below college level,” “college level,” or “above college level,” with each faculty member defining the skills and performance needed to be placed in these performance-level labels (PLLs). If the college defines a set number of outcomes and uses a common rubric, they can then have a standard setting meeting to determine cut scores (see standard setting plan). While the college collects information about current assessments, they can also collect samples of student work to be used to rate the work with the rubrics and provide feedback during standard setting sessions. This will yield more valid and reliable results, and it will also foster conversations about what students should be able to do and what they can do.

The assessment plan should include both multiple choice and constructed response items (Dwyer, 2006). For the assessment of critical thinking, MCTC used a standardized multiple-choice exam and constructed items during embedded assessments. This strategy worked to decrease resources and faculty workload and increase faculty participation. A similar strategy is recommended for future assessment plans.

Once assessment instruments are chosen, the college needs to determine how data will be collected. There are three types of measure: (1) student input measures (i.e., before they enter college), (2) student output measures (i.e., after they complete college), and (3) measures of change (i.e., output minus input to understand the contributions of the institution) (Dwyer, 2006). The comparison of entering and exiting students (taking into account the academic ability of students) will allow for focus on learning or value-added gains (Voluntary System of Accountability, 2008). The college will need to identify an appropriate sample population (Dwyer, 2006). For example, will the data collection be longitudinal or cross sectional? The latter would involve random sampling of entering and exiting students and is quicker, easier and more cost effective (Voluntary System of Accountability, 2007). Student motivation to demonstrate knowledge and skills and testing incentives should be considered (Dwyer, 2006 and Millett, 2008). The assessment strategy should be cost effective (Dwyer, 2006) and consider faculty expectations and additional workload. It should also be regular, ideally annually or at the very least, every other year (Dwyer, 2006; Walvoord, 1988; Wellman, 1999). It should also be reviewed regularly and allow for comparison across years (Millett, 2008).

Whichever instruments are chosen, they should reflect: (1) the mission of the college, (2) the composition of the college, (3) service to the community and the public good, (4) teaching and learning, (5) cognitive vs. affective skills, (5) external accountability to stakeholders, and (6) stakeholders’ attitudes and priorities. The three elements should be: (1) goals, (2) indicators (which should be easy to measure and monitored over time), and (3) measures (Dwyer, 2006).

The assessment strategy should also build on existing classroom and institutional assessments. It should be focused and brief (Dwyer, 2006 and Wellman, 1999). The plan should be comprehensive, repeated, and use data to understand problems and implement effective improvements in curriculum (Dwyer, 2006). Finally, the college should determine how they will use the data to learn from their assessment efforts, to make institutional changes by communicating results and decision-making processes, and cultivate a culture of evidence (Millett, 2008).

The proposed assessment plan follows the American Association for Higher Education's (AAHE) "Principles of Good Practice for Assessing Student Learning" (Walvoord, 1988, p. 189-191) These include:

- 1) The assessment of student learning begins with educational values
- 2) Assessment is most effective when it reflects an understanding of learning as multidimensional, integrated and revealed in performance over time
- 3) Assessment works best when the programs it seeks to improve have clear, explicitly stated purposes
- 4) Assessment requires attention to outcomes but also and equally to the experiences that lead to those outcomes
- 5) Assessment works best when it is ongoing, not episodic
- 6) Assessment fosters wider improvement when representatives from across the educational community are involved
- 7) Assessment makes a difference when it begins with issues of use and illuminates questions that people really care about
- 8) Assessment is most likely to lead to improvement when it is part of a larger set of conditions that promote change
- 9) Through assessment, educators meet responsibilities to students and to the public

The chosen strategy should seek means to assess student-learning outcomes related to measurable competencies and outcomes in order to analyze the effectiveness of various teaching pedagogies and course delivery methodologies (Wellman, 1999). The college should develop assessment instruments and strategies to employ "task-oriented and meaningful conversations about purpose, priority, measure and effectiveness" (Wellman, 1999, p. 20) – both internally and externally. And, the strategy should be tied to the resources and mission of the college (Dwyer, 2006; Millett, 2008; Walvoord, 1988; Wellman, 1999). In the end, the assessment should use data to improve student learning (Dwyer, 2006).

References

- Dwyer, C.A., Millett, C.M., and Payne, D.G. (2006) A Culture of Evidence: Postsecondary Assessment of Learning Outcomes. Retrieved May 6, 2008 from: <http://www.ets.org/>.
- Gottlieb, K. and Robinson, G. (2002) A Practical Guide for Integrating Civic Responsibility into the Curriculum. Washington, D.C.: American Association of Community Colleges.
- Millett, C.M., Stickler, L.M., Payne, D.G, and Dwyer, C.A. (2007) A Culture of Evidence: Critical Features of Assessments for Postsecondary Student Learning. Retrieved May 6, 2008 from: <http://www.ets.org/>.
- Millett, C.M., Payne, D.G, Dwyer, C.A., Stickler, L.M., and Alexiou, J.J. (2008) A Culture of Evidence: An Evidence-Centered Approach to Accountability for Student Learning Outcomes. Retrieved May 6, 2008 from: <http://www.ets.org/>.
- Pascarella, E.T. and Terenzini, P.T. (1991) How College Affects Students. San Francisco: Jossey-Bass.
- Voluntary System of Accountability (VSA); Information on Learning Outcomes Measures. (2008). Retrieved on May 6, 2008 from: <http://www.voluntarysystem.org/index.cfm>.
- Walvoord, B.E. and Anderson, V.J. (1988) Effective Grading: A Tool for Learning and Assessment. San Francisco: Jossey-Bass.
- Wellman, J.V., (1999) Contributing to the Civic Good: Assessment and Accounting for the Civic Contributions of Higher Education. Washington, D.C.: The Institute for Higher Education Policy.

V. A Closer Look Back

Significance of the Reports, Embedded Critical Thinking Assessment Project

Defining Critical Thinking

Faculty were asked to identify their division/program definition/use of critical thinking. The goal was to create a connection between the MCTC definition of critical thinking, how it works at the program level, how it works at the course level, and how each assignment reflects it as well. These things were hard for many faculty to articulate at the beginning stages of the project.

Participants were required to use some aspect of the MCTC definition in their rubrics – this was the most uniform way to create some sort of benchmark, since there is no shared definition of what we mean by college level critical thinking, but we do have an agreed upon definition of critical thinking across programs at MCTC.

Connections to Other Competencies

Several instructors embedded assignments dealing with synthesis and analysis of ideas concerning cultural difference. It would be interesting to follow up with these instructors for input on assessing social responsibility in 2009.

Assessment to Improve Student Learning

Most participants commented that the project helped them to become better teachers, which should by extension lead to improvements in student learning. One used her project to generate data for comparing lecture vs. active-learning pedagogies. Many came to see, via the assessment process, that making expectations more transparent via rubrics enables faculty to be more able to judge what students have learned as a result of instruction:

I believe they understood what it meant for this assignment to think critically. Rather than vague terminology, the rubric helped them to see what it meant to compare and contrast. I will probably write a critical thinking rubric for every paper assignment now that I have seen how effective it is. I really think they understood how to compare and contrast and think creatively to solve problems.

I think this project has helped me see how some students need to have several forms of explanation before they will really understand an assignment. I will probably use multiple routes in the future—the more chances they have, the better the outcome.

I can see now that the students need more practice synthesizing the material in the reading with ideas/events from their own experience. In the future I will give them more practice and feedback in this area as many students failed to draw connections between the experiences they described and the events/ideas in the text. They often left it to the reader to intuit the connections they intended rather than stating them directly and giving

examples from the text. Thus, they may have been thinking critically, but they failed to give good evidence of it.

Participating in these assessment projects provides the incentive to systematically design assessments and analyze the data. It has prompted me to be more systematic in writing exam questions, thinking about pedagogy, and emphasizing and incorporating practice of critical thinking skills in the classroom, on assignments, and in assessments.

The act of designing the rubric actually impacted the design of the assignment. In future years I would like to survey the students to compare the work of those who consistently used the rubric for guidance with those who did not.

[I see] the entire course as an interlocked web of teaching, reinforcing, assessing and re-teaching skills, concepts and ideas. Though I am not “sold” on the rubrics idea, because I am afraid that both teachers and students will teach or produce *to the rubric* rather than to the actual concepts. I can see a rubric’s value in determining specific skills that can be learned and then assessed; and in creating purposeful learning.

Change at the Program and Curricular Level

Several participants report a sense that students are entering the classroom with lower levels of background knowledge, study skills, and ability to use critical thinking skills, and plan to use assessment to determine where students stand at entry level and as they progress through a sequence of courses.

In future semesters, I could track this by adding a pre-test administered on the first day of class. As a department, we could also work with the prerequisite courses to ensure that these skills are developed.

Working on this assignment as an embedded project has pushed me further than I might have. Last year doing this process led me to crafting my core objectives for the class. This year, after teaching the course in the fall, I have spent the spring entirely revamping my course materials to better reflect my core objectives.

This rubric is one I started during Critical Thinking Advocate training last spring, and I finished it this semester with this assignment in mind. The rubric was originally designed for a similar assignment at a higher level in our curriculum, so changes were made to reflect the level of expectation at this level. In the past I did not use a rubric for this assignment. Using a rubric will make the grading more consistent and will make it easier to give the students useful feedback. The rubric makes the teaching of critical thinking more explicit and more intentional.

**Critical thinking:
Ability to analyze,
interpret, and apply
learning in order to
identify and solve
problems, make
judgments and
decisions, act, and
evaluate actions taken.**

Sub-competencies:

- F. Compares and contrasts facts, propositions, options, situations and sources to gauge similarities, differences, priorities, connections and relationships.
- G. Gathers, synthesizes and integrates input from diverse sources to formulate and support a position, plan an experiment, produce an oral presentation or written report, create a product or performance or propose hypotheses.
- H. Assesses multiple perspectives on an issue, problem or undertaking, and articulates an understanding of the merit of diverse positions, attitudes or methods.
- I. Applies a variety of rational, creative, emotional and technical approaches to question assumptions or practices; identify illogical thinking, manipulative language or bias; engage in artistic expression; or complete a task.
- J. Applies knowledge, concepts, information, experience, theories and techniques to draw conclusions, arrive at solutions, or select a course of action

**Assessing Embedded Critical Thinking
Assignments: Participants, 2007-2008**

The following faculty have satisfactorily completed Critical Thinking Embedded Assessment projects.

Sarah Clowes, Reading
READ 0100, Reading 1

Assignment: to write a paper about aspects of the student's culture and to discuss another student's paper – comparing and analyzing

Rekha Ganaganur, Biotechnology
BIOT 2301, Biotechnology Lab & Math Skills
Assignment: to conduct laboratory measurements successfully – synthesizing and analyzing input

Jane Gringauz, Math
MATH 1165, Mathematics for Teachers
Assignment: to respond to story problems – assessing multiple perspectives and analysis

Haile K. Haile, Math
MATH 0070, Introductory Algebra
Assignment: to solve problems without calculators, using critical thinking skills – using a variety of approaches to complete a task

Ranae Hanson, English
ENGL 2251 & 2252, British Literature 1 & 2, online
Assignment: to produce a web page discussing cultural connections in works of literature – comparing contrasting similarities and differences

Virginia Heinrich, Library
INFS 1200, Intro to Technical Information Services
Assignment: to write an abstract of a text following professional guidelines – analyzing and applying knowledge

Kate Lynn Hibbard, English
ENGL 1111, College English 2
Assignment: to respond to a text and use that response in a research context – analyzing and applying knowledge

Jennifer Jakubic, ESOL

ESOL 0042, Reading 4

Assignment: to write a response paper on a short story – synthesis, interpretation and analysis

Michael Kissin, Theatre

THTR 1161: Guthrie Theatre

Assignment: to write a 1000-word review of a Guthrie Theatre production – synthesis and analysis

Erica Lam, Speech

SPCH 1012, Intercultural Communication

Assignment: to write a paper on responsible tourism and cultural differences – comparison, analysis, and applying theories

Jay Miskowiec, ACES

PHIL1171, Philosophy of Ethics

Assignment: to write an essay justifying choices in an ethical dilemma – applying knowledge, concepts, and theories to draw conclusions and select a course of action

Diane Nelson, Graphic Arts

GRAPH 1120, Layout and Design I

Assignment: to determine how to meet the needs of a client ordering a brochure – applying various creative and technical approaches to complete a task

Cheryl Neudauer, Biology

BIOL 2225, Physiology

Assignment: to learn and retain course material and complete an exam including embedded critical thinking objective questions – applying knowledge, concepts and information

**Critical thinking:
Ability to analyze,
interpret, and apply
learning in order to
identify and solve
problems, make
judgments and
decisions, act, and
evaluate actions taken.**

Sub-competencies:

- K. Compares and contrasts facts, propositions, options, situations and sources to gauge similarities, differences, priorities, connections and relationships.
 - L. Gathers, synthesizes and integrates input from diverse sources to formulate and support a position, plan an experiment, produce an oral presentation or written report, create a product or performance or propose hypotheses.
 - M. Assesses multiple perspectives on an issue, problem or undertaking, and articulates an understanding of the merit of diverse positions, attitudes or methods.
 - N. Applies a variety of rational, creative, emotional and technical approaches to question assumptions or practices; identify illogical thinking, manipulative language or bias; engage in artistic expression; or complete a task.
 - O. Applies knowledge, concepts, information, experience, theories and techniques to draw conclusions, arrive at solutions, or select a course of action
-
-

Elizabeth Pauly, Music

MUSC 1000, Introduction to Music

Assignment: to complete a chart comparing two kinds of music – comparing and analyzing and applying skills

Melissa Reid, English

ENGL 1110 and 1111, College English 1 & 2

Assignment: to write an essay on peer review feedback – synthesis and analysis

Perry Ruedy, Carpentry

CARP 1700, Residential Construction #3

Assignment: to build a 8X8 framed structure – gathering, synthesizing, and integrating input from diverse sources to create a product

Greg Skudlarek, HVAC

HVAC 2350, Commercial Ice Machines

Assignment: to diagnose and troubleshoot ice machine faults – applying knowledge, concepts, and information to select a course of action

Yolanda Williams, Music

MUSC 1060, Intro to World Music

Assignment: to write a paper and create a playlist exploring different styles of music and their cultural influences – comparison and analysis

Cory Woosley, ADEV

ADEV 1100, Strategy for Success

Assignment: to create and reflect on the process of assembling an E-folio for potential employers – gathering, synthesizing and integrating input to create a product

Carissa Wyant, ACES

PHIL 1171, Philosophy of Ethics

Assignment: to write a research paper exploring an ethical problem from various angles – applying knowledge and theories to draw conclusions

Embedded Critical Thinking Assignments Spring 2008 Report

Please complete and e-mail to KateLynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: _____*Sarah Clowes*_____

Course name and number: _____READ 0100 Reading 1_____

Number of students: _____8_____

Intended audience of the class (1st year, 2nd year, other): _____1st year_____

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?

A. Course Objectives

- Understand more of what you read.

Students will read one another's essays on their cultures. Two factors will motivate them to try to increase their comprehension of classmates' essays: these include the fact that they will be graded on whether or not they can demonstrate that they understood what they read and natural social curiosity which will drive them to find out more about their classmates and their classmates' cultures. In the course of completing the assignment, they will have a chance to practice specific strategies from earlier in the semester, such as finding the main ideas of paragraphs.

- Follow complex directions.

The directions to the second portion of the assignment will be clear but complex.

- Master technical vocabulary.

Because this assignment is a culminating assignment in a chapter on culture, students will have gained a familiarity with sociological terms relating to culture. It will be an opportunity to demonstrate their mastery of these terms.

B. The reason I chose this course is that it is the only course I am teaching this semester! However, I was eager to enhance the critical thinking aspects of this course since I haven't taught it as often as other courses about which I feel more confident in terms of promoting critical thinking.

2. Briefly describe **the assignment**. **What do students do during** the assignment?

The assignment asks students to use two different types of sources and write a two page minimum description of two events from their culture. For example, the two events might be a wedding and a funeral or a coming-of-age ceremony and a holiday. The second part of the assignment, which is the part I am creating and revising, will ask students to listen to and read one another's papers and use technical (sociological) vocabulary to find similarities and differences among and between their cultures and other students' cultures.

3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?

Objectives for the embedded assignment:

- Students will demonstrate mastery of technical vocabulary.
 - Students will follow complex instructions.
 - Students will gain an appreciation for the similarities and differences among and between cultures, promoting respectful dialogue and general cohesiveness in the classroom.
 - Students will synthesize and integrate input from diverse sources to prepare a concise written statement using knowledge from the chapter they completed as a framework.
4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)

What are the student learning outcomes for your embedded assignment? (What should students be able to do after completing the assignment?)

- A. Students will be able to articulate similarities and differences between the norms and values of their culture and another student's culture.
- B. Students will be able to identify any cultural universals shared by the two cultures.
- C. Students will be able to post their papers on D2L for other students to read.
- D. Students will be able to retrieve and read other students' papers.

5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

My division defines critical thinking for this level as follows: "Students will demonstrate ability to make inferences by determining the meanings of unknown words based on the contextual evidence in their readings and composing critical thinking questions based on their reading."

In this assignment, students will demonstrate that they have correctly inferred the meanings of the technical vocabulary in the readings. In addition, they will need to infer the values of the

culture they read about. In addition, students will ask a question about their peer's culture which may be a critical thinking question.

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

I designed the rubric for this project based on the course objectives the project was designed to address. I added a section about completion to encourage thoroughness. The descriptors I chose for the rubric represented the levels of Bloom's Taxonomy I targeted. These included the following: comprehension, application, comparison and contrast. I intentionally avoided the highest levels of Bloom's Taxonomy because I did not feel they were appropriate for this assignment with this group of students.

Using a rubric did not have an impact on the assignment except that it will be more likely to promote a serious attitude among students than a less formal assessment tool.

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?

What is significant about these numbers? The number of students who were able to complete the assignment at or above 80%, which I defined as college level, was lower than what I expected. On the other hand, the assignment itself was a college level assignment and the class students have placed into a remedial course because they are not at college level yet. It will be interesting to see how the results of this assignment relate to the exit test results on an individual and a class level.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

What are the subjective results? Embedding aligned the assignment with departmental goals and the stated goals of the course. It also led me to attempt to include more critical thinking in the assignment itself. In some ways, I better understand the lack of critical thinking outcomes listed for this course by our department because a heightened focus on the higher level critical thinking outcomes is not appropriate for this level course.

At least two of the students who either did not complete the assignment or completed it below college level were stymied by the complexity of the computer aspects of the assignment. Working on this assignment made me more conscious about stressing the key technical vocabulary that I wanted students to understand and apply in the assignment. About half of the students were able to use the technical vocabulary correctly, but this is too low.

In terms of future critical thinking assignments for this class, I intend to strengthen the focus on correct comprehension and understanding (accuracy), because that is the foundation of higher level critical thinking.

9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

One thing that might help students master key technical vocabulary would be to require them to create and maintain a course master file, in which they record key concepts and terms. Students could refer back to this file as necessary.

There are a few changes I would make to this assignment to improve the results. First, I would guide students through finding and defining the key technical vocabulary on the worksheet. It was apparent to me that they needed more scaffolding to succeed in this area. Second, I would go over the rubric with the students in greater detail before the day of the assignment. Third, I would give the assignment a day or two after the culture project is due so that the students wouldn't be mentally exhausted from having just completed the assignment. Fourth, I would spread out the assignment. The first day, I would have students complete the computer aspect of the assignment (posting their paper on D2L). I would give them a few days to complete this outside of class and seek extra help if necessary before they completed the second step of the assignment. I might even give students extra credit for helping other students figure out how to do it. This could eliminate the stumbling block of computer problems. Fifth, I would change the way the students label the posting so it would be easier for them to go back and track other students' responses to their papers.

10. Please share any additional comments and/or suggestions for improving this process.

I have found the critical thinking embedding process we followed to be educational and enjoyable. I particularly enjoying hearing what other instructors are doing to promote critical thinking. It was also helpful to receive feedback and suggestions from colleagues. Thank you for this opportunity.

	# of students given assignment	# of students completing task	Below college level		College level (80% minimum)		Advanced level	
			#	%	#	%	#	%
Results of Trial 1	10	8	4	50%	3	38%	1	13%

**Embedded Critical Thinking Assignments
BIOT 2301 Spring 2008 Report**

Instructor Name: Rekha Ganaganur

Course name and number: Biotechnology Lab and Math Skills (BIOT 2301)

Number of students: 5

Intended audience of the class (1st year, 2nd year, other): 1st year

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?

The **objectives** of the BIOT 2301 course pertaining to this assessment are to enable students to a) conduct laboratory measurements with minimum sources of error, b) choose appropriate basic equipment and math skills for such measurements, c) identify “unknown” sample concentrations through graph construction and statistical analysis and d) in the case of errors, to identify the source(s) of error and determine ways to troubleshoot.

The associated activities involving critical thinking were anticipated to enable students to i) apply the underlying principles of analytical measurements to choose appropriate devices for the type and quantity of a sample to be measured, ii) incorporate appropriate methods of handling those devices based on factors that could affect the accuracy of the resulting measurement, iii) determine if the measurements and associated math calculations they carried out were indeed accurate, iv) if errors occurred, how to troubleshoot them and incorporate appropriate corrective and preventive action (CAPA) as part of “quality control” to meet product specifications and iv) when several steps/experiments are involved in getting one end-product/result, how to incorporate “traceability” to check the accuracy of each step, to arrive at the end-product as per the core essentials of the “quality control”.

There are several reasons why this course was chosen:

- a) Critical thinking is one of the program requirements in the new biotechnology A.S. degree program. Among the core biotechnology courses in the program, BIOT 2301 (current number, and will change to BIOT 2320 starting Fall 2008) is the first laboratory-associated course where critical thinking was identified as a learner outcome and is required for all other higher courses in the program.

- b) The BIOT 2301 course is designed to provide students a solid foundation in the skills and competencies related to several basic laboratory techniques as applied to quality control emphasized by regulatory agencies. Knowledge of quality control and experience at any level to achieve it is highly desired by potential employers in academic research, government and industry in various sectors of science and engineering. The success in laboratory experiments/projects in such scenarios is heavily dependent on “critical thinking”, which is one of the highly desired “soft-skills” by potential employers in all sectors. Hence, this course was a logical choice.
- c) For students to successfully complete the types of expected tasks, it will involve the critical thinking aspects in the context identified by MCTC, *viz.*, ability to analyze, interpret, and apply learning in order to identify and solve problems, make decisions, suggest actions and evaluate actions taken. Among the subcompetencies identified by MCTC under critical thinking, in the context of this laboratory course, a student will have to be capable of i) applying the knowledge, concepts, information, experience, theories and techniques to draw conclusions, and select a course of action and ii) gather, synthesize and integrate input from diverse sources to propose a hypothesis, plan an experiment or produce a written report.
- d) The **objective #c** described in the previous page is common to most courses in the A.S. Degree programs in Chemistry and Biotechnology and enables students to learn the task of applying recently acquired skills and understandings to determine an “unknown.” This “unknown” could involve the identity, composition, concentration, and/or many other (bio)chemical and physical characteristics of a given substance. In the chemistry department, we have currently identified this objective for our department-wide assessment and we have begun assessing this aspect in the gateway course Principles of Chemistry-1 (CHEM 1151) as described in Section-5. The current “critical thinking embedding assessment” in the BIOT 2301 course, which requires CHEM 1151 as the prerequisite, will tie into the department assessment. It is anticipated to provide us better insight into the achievement of required competencies as students progress in the programs and to enable us to incorporate better pedagogic techniques as we continue to strive to improve the new programs.
- e) For the initial stage of the department-wide assessment, the focus is mainly on graph-constructing and –interpreting skills in assessing students’ ability to determine “unknowns,” because graphs are commonly used as a tool for doing just that and requires various types of “analyzing and interpreting”. However, for the BIOT 2301 course, since the expectation is that the students would have already learned those skills from the pre-requisite chemistry course, the focus of this assessment was on other aspects, although graphing was part of the activities. Depending on the results of this “embedding project”, future assessment process will be modified.

2. Briefly describe **the assignment**. **What do students do during** the assignment?

The assessment is divided into several assignments to be able to track the progress with each intervention soon after each outcome, and allow multiple contexts of application of critical thinking just like it would in a workplace setting. The assignment consists of pre-lab and/or post-lab questions and in-lab experiments.

Part-1: A self-evaluation through a series of questions regarding students' preparedness for the activities of this course, based on their prerequisite math and chemistry courses (please see Section#3 for description of purpose and what students will learn). Lecture and in-lab guidance are provided by the instructor.

Part-II: Students carry out an experiment based on the protocol, standard operating procedures and instructions that are provided. Some of the concepts from the pre-requisite courses are emphasized here as a refresher and any new concepts are explained by the instructor and in the prescribed text-book. A post-lab assignment is included for assessment, for various aspects involved in analyzing and interpreting their data, to determine appropriate choice of devices for future experiments, statistical analysis to determine outliers, if those outliers should or should not be discarded and why, and interpret why those data points tended to be outliers in the first place. They have to determine the accuracy of their device over a given range of values through graph constructions. They have to identify sources of errors and suggest ways to overcome those errors. This post-lab assignment also includes writing a detailed professional report, which requires ability to synthesize and integrate their experimental results, draw conclusions and propose future course of action.

Part III: From their experiences in Part II and post-lab analysis, applying their abilities to synthesize information from diverse sources (book, handouts, regulatory agencies sites) and applying the concepts, students now have to be able to prepare a multi-component reagent according to quality specifications, by choosing appropriate methods among three possible options provided. The success of the critical thinking involved in this work is measured by the accuracy of the intended outcome, viz., pH value and conductivity value as per the expectations based on chemical principles. The values may differ since the outcome is dependent on not just critical thinking but the competency in handling the equipment as well (technical skills). Therefore, to account for this, if the values did not match the expectations, students are required to identify the possible reasons, troubleshoot deducing from "traceability" and draw conclusions.

Part IV: Building on their experiences from Part-1 through III, as a pre-lab assignment, students have to propose a dilution method for the different parts of the next experiment, among the two dilution methods available. They have to propose the right choice of the measurement device among the four options available, and have to draw a diagram to indicate the correct set up of the device, based on metric conversions and the device's limitations. They have to come prepared to the lab with this design. Peer-review is incorporated for reasons explained in Section-3. During the lab, they have to prepare the set of diluted reagents as per their own design of the experiment, and use this set of solutions to determine the linear range which would aid them in determining an "unknown" concentration given to them.

Part V: For the same experiment in Part IV, a post-lab assignment is embedded, where they now have to interpret their data to determine the accuracy of their work in Part-IV. This is done through graphical and statistical analysis. They have to also compare and contrast results from two different sets of data – one arrived through their own graphics analysis and one through the “electronic data capture” automated through the instrument. If their “unknown” did not turn out to be exactly what was given to them, and/or if the two sets of results did not match, they have to identify the reasons and provide rationale.

Part VI: This was incorporated based on the results of the assessment until Part V. Using all the techniques and critical thinking strategies they learned until Part V, students will carry out a multi-part independent project for expression and analysis of Green Fluorescent Protein. Students should be able to not only get biologically active protein, but also quantify the protein which is now their “unknown”.

3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?

Part-I: Self-evaluation questionnaire (not evaluated): This is designed to enable students to revise the concepts that were introduced to them in different contexts in their previous courses (pre-reqs), which are now required to be applied in this course. This also helps the instructor to get everyone up to the same level of preparation and readiness (at least that is the hope) regarding basic concepts, irrespective of at which institution they had completed the prerequisites, before actual assignments are administered for assessment. A review lecture is provided and students are instructed to contact the instructor if additional help is needed, or to read the relevant chapters from the prescribed book to refresh their memory.

Part-II: The purpose is to enable students to realize the various factors that could play a role in precision and accuracy of measurements. Instrumentation errors, operational errors, mathematical errors can all contribute to sources of error. Students should be able to not only list all possible sources of error in general sense, but also learn to pin-point the specific errors in their specific set of experiments. They learn to then suggest appropriate CAPA for their team for improving quality control. **This set of tasks, in combination with the requirement of writing a report addresses subcompetency #2 defined under the definition of critical thinking by the college.**

Part-III and PART VI-: Another important aspect students learn is that, simply suggesting and implementing CAPA is not enough. It has to be proven that the particular CAPA is actually working! This means, a good deal of critical thinking is involved to come up with appropriate CAPA! This knowledge is anticipated to be imparted in Part-III and Part-VI of the critical thinking assignment that are graded. Peer-review is also implemented. **These parts address subcompetency#5 defined under critical thinking. In addition, the graph construction and interpretation skills are related to the department-wide assessment which will be explored further in the next semester in this and other courses.**

The particular sets of assignments were chosen as related to basic techniques and devices that are commonly used in a variety of labs, and even in this course, for a number of experiments. Multiple parts of the assignment were needed to give sufficient practice under different contexts to improve upon their critical thinking and to be able to track the progress. Some devices and techniques that are chosen, although are simple, also seem to be the most confusing for students and have been emphasized as “must-know” techniques by potential employers. Part-VI was introduced later, based on the assessment outcome of Part-II to V, for reasons mentioned in question#6.

4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)

Part-1: Not applicable, was designed only as a refresher.

Part-II through Part-V: For details see questions#2 and #3 described above. Students should be able to independently make decisions on correct choice of measuring devices, appropriate handling to minimize sources of error, planning and designing the experiment, interpretation of data, identification of sources of error and course of action to overcome those errors to arrive at quality results. Each part is also, to some extent, dependent on the previous part and requires synthesizing, integrating and drawing conclusions from previous parts. All of these are measured based on the experimental results, pre-lab planning and/or post-lab analysis and reports.

Part-VI: The success of their Green Fluorescent Protein project is measured by the ability to successfully transfect the gene into a bacteria, express the bioactive protein in a host organism, purify the protein, be able to quantify the amount of protein, and characterize the purity of the protein, all using the techniques and critical thinking they learned during the first part of the course, using their own reagents, measurements and planning, rather than any reagent provided in kits by the vendors. **Careful consideration was given to make distinction between the effect of critical thinking and ability with technical skills, in assessing the outcome.**

5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

As described in other sections (#1 and #3), the chemistry and biotechnology program's/department's long-term assessment plan focuses on student learning in the laboratory. For achieving such learning outcomes in the two programs, critical thinking in the context of ability to analyze, interpret, and apply learning in order to identify and solve problems, is at the core of the mission of the two programs. In addition, since the students are also being prepared for undergraduate research experiences, career possibilities and internships upon graduating from the (biotechnology) program, critical thinking in the context of the two subcompetencies described in question#1 are being addressed.

Every course we offer in our department has a complimentary laboratory component. In each of these laboratory courses, we regularly assign students the task of applying recently acquired skills and understandings to determine an "unknown." This "unknown" could involve the identity, composition, concentration, and/or many other chemical and physical characteristics of a given substance. This year (2007/2008), we have initiated this project by assessing graphing skills of students in one of our gateway laboratory courses: CHEM 1151, Principles of Chemistry I.

We have decided to focus on graph-constructing and –interpreting skills as our initial step in assessing student ability to determine "unknowns," because graphs are commonly used as a tool for doing just that and requires various types of "analyzing and interpreting".

Our department faculty members are interested in monitoring student ability to determine "unknowns" in multiple settings and contexts (using a variety of skills and techniques, in differing courses, etc.). This type of comprehensive assessment program will allow us to look for trends across courses regarding common learning/teaching strengths and challenges, and also improvement (or lack of improvement) as students progress through a four or five semesters sequence of courses.

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

This is my first attempt at designing the rubrics and embedding the critical thinking aspects in a measurable manner for this course (rubrics are attached). Since there are no commonly agreed/defined college level descriptors in this case for this course, I have adopted these terms to fit the needs of the course and for the 2-year program. Please see attached rubrics for what constitutes "college level" for this course.

Several factors were considered in designing the activities and associated rubrics. Through my initial survey of potential employers as well as advisory committee, several technical

skills which are also dependent on “soft-skills” of which critical thinking is a primary one, were determined as the “must-know” or “must-have” skills. The rubrics for Parts II-V were developed based on what was identified as the “must-know” list by national biotechnology agencies and potential employers in the State of Minnesota from this type of course/program.

In addition, as per the current Good Manufacturing Practices, there are certain basic requirements of personnel’s qualification and training and also certain requirements for meeting “quality control” and “quality assurance”. In biotechnology scenarios, all stages of product development, from conception of idea to the final release of product involves critical thinking. The descriptors for critical thinking indicated by potential employers were akin to the descriptors defined by MCTC, albeit adopted in a manner applicable to the specific laboratory scenarios.

A major change that was made during the semester was introducing Part VI for the reasons described below:

- A) The complete success of critical thinking is based on obtaining the end-product according to “specifications for product release”. This would involve planning and carrying out all steps in the project appropriately and accurately, by all personnel in a team, irrespective of which discipline of science or engineering they are qualified in. Therefore, “Quality” has to be built throughout the process. When end-product fails, laboratory personnel have to critically think where the errors might be residing, based on “traceability” procedures embedded throughout all the product development stages, to take the right course of action, with efficient use of time and resources to rectify the errors and be able to do “lean manufacturing”. Therefore, in addition to assessing various stages during the course as described in Parts II-V, success of a whole multi-part project was also measured in Part-VI.
- B) Part-VI was an independent project which allowed students to integrate many theories, concepts and planning processes in a multi-step exercise to arrive at a final product. The proficiency in technical skills were not part of this “embedding” project assessment and therefore, was not anticipated to have any bearing on the outcome of this assessment.
- C) The assessment data results from Part s II-V discussed in question#7, indicated that a second opportunity after some intervention (described in Questions#8) was required. Based on the feedback given to the students until Part-V and based on their own self-assessment of their performance, Part-VI allowed students to identify their weaknesses and provided a second opportunity to correct their errors and improve on their soft-skills and technical skills.

The outcome of this embedding assessment project this semester will be an indicator of whether the assignments and rubrics need to be modified for future semesters. The outcome of the department-wide assessment will also be taken into consideration for future modification.

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?

The program being new and the course being relatively new, the enrollment is still low (5 students). Therefore, statistically, the sampling number is low to draw significant conclusions, but has provided a good insight as described below.

For the learner outcomes, the target had been set as 80% of students will be able to meet the college level requirements. Although 100% would be ideal, we do not live in an ideal world. Students taking this course come from all ages and background, some who have met the prerequisites just the semester prior to taking the course, some more than three or five years ago and elsewhere other than at MCTC, and some are overambitious and register for five laboratory-based courses (15 credits or more) despite having to attend to their jobs and families. The contexts in which the current parameters of critical thinking skills are being measured, was to some extent dependent on the prior level of knowledge of concepts, retention of information and time spent preparing for the activities.

Results:

Part-II: 40% of the students were below college level, 20% each, at and above college level. This was lower than expected, because some of the skills that were involved here were also part of their learner outcomes in the prerequisite courses. This suggested that there was more intervention needed early in the semester. However, the performance in this category may improve in the future, when the department-wide assessment that is currently ongoing is completed and intervention activities are put into place in the prerequisite course. In any case, currently in this course, a preparative session was included before moving on to Part-III. Also for future semester, plans are in place to do this, as explained in question#9. It also seems like there were too many parameters involved in this part which could have been overwhelming to the students.

Part-III: There seems to be quite a good success here, with 60% of students performing at college level and 40% at above college level. Either the intervention explained above helped, or this part may have been easier for some students, since only a few of the critical thinking parameters were involved.

Part-IV: 40% of students performed at college level, 40% above college level and 20% at below college level. The specific laboratory measuring device involved in this part seemed to be the most confusing for students. Emphasis on more practice sessions and refreshing of metric systems of measurement will be needed.

Part-V: Part-V results are poor. Only 40% were at college level or above. This, once again involved competencies from Part-II and the prerequisites, a new instrument and concept which students had not been exposed to before in-depth. Therefore, in the limited time, synthesizing and integrating new information might have posed challenges, within

the limited lab time (this is only a lab course, no lecture associated with it, but that will change starting Fall 2008).

One student who was below average in the beginning continued to be so for most part of the semester, irrespective of multiple intervention by the instructor to assist the student in improving the necessary technical or soft skills.

One student who was above average in the beginning continued to be so all along without any help from the instructor.

The performance of the other three students varied from one assessment to the other, depending on which critical thinking skills were necessary for which experiment.

Part-VI: The high success rate in student outcome in this section can be attributed to several reasons. Before starting this part, several reinforcing activities were introduced as described in section-9. By this time students also better realized what their weaknesses were, based on the feedback from the instructor, their graded papers and the results from experiments. Therefore, students engaged with more discussions with the instructor, availed the “open-lab” practice sessions effectively, before starting their independent project in Part-VI. In addition, there was also a surge in excitement and enthusiasm since students could take ownership of their project and create a live biologically active molecule, using similar techniques that are used in creating therapeutic biopharmaceuticals as in recombinant human insulin. Therefore, this enabled them to see the relevance or importance of the aspects that lead to successful products.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

Embedding enabled me to develop rubrics, which in turn helped in designing the assignments with a better focus on most important and relevant aspects based on the descriptors of critical thinking and the subcompetencies.

The rubrics were NOT provided to the students, for the reason that I did not want them to practice only a couple of tasks repeatedly during the open-labs. I rather wanted them to practice all skills which they were not comfortable with, to be successful in an entire project. However, the embedding project allowed me to draw their attention more often, to the strategies that they need focus on, and the value of critical thinking in the context of the descriptors adopted. In all the discussions/short lectures, I was able to give examples as how or why I adopt critical thinking in such scenarios, my own experiences when I work on the protocols or research projects, or even in planning this program.

The current embedding was throughout the course this semester, not just for any one part. One assignment was dependent on the other. Therefore, there were no changes made to any

of the later assignments in order to gather comprehensive data for this course. Neither the assignments nor were the experiments from Part II-PartV were modified, since the minimum requirements of the program/course had to be met according to the expectations of potential employers and the competencies required for higher level courses which require BIOT 2301 as the prerequisite. For future semesters, improvements will be made with regard to the order of experiments/assignments to build the skills in a shallow gradient than a steep ramping up, for reasons mentioned in Section-9.

The major impact was that the outcome of Parts-II to V called for introduction of another Part (Part VI) to the assignment/project for reasons described in section 7 and section 9.

9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

Early in the course, it became very evident from Part-I that most students had not retained what they had learned from the prerequisite math and chemistry courses. They struggled to complete the first self-study/self-evaluation questionnaire. In addition, not all students in the course had taken the prerequisites at MCTC, and not necessarily in the immediate past (some had taken the prerequisites more than three years ago). Therefore, there was no continuity *per se*.

Extra introductory sessions and handouts describing the list of topics had to be provided to enable better awareness of the knowledge and skills that were required to be successful not only in this course, but also in work-place scenarios for various applications. This will be continued in the future semester. In addition, role-playing activities will be introduced as “quality control supervisors” or “team-leaders”. Also, the protocol hand-outs will be modified to be more detailed with extra clarification.

For next semester, I would like to try out giving the rubrics in the beginning of the semester and explain the rubrics to the students. This might help than hurt. But the rubrics will have to be simplified.

In direct contrast to the critical thinking descriptors, initially, even after refresher activities, lectures and handouts, some students were unable to integrate and correlate the concepts they had learned in the prerequisites. Nor were they appreciating the interdisciplinary applicability either to different courses or work-place scenarios in multiple fields, since they had a wrong notion that these are just for biotechnology. There was a general lack of awareness of how the errors in one sector can affect the results in most other sectors.

There was also a certain reluctance exhibited by chemistry majors towards taking this course because University of Minnesota does not require this course! But as the semester progressed, this reluctance was overcome due to the activities described below and better realization of the relevance and the importance of the course in all sectors, and how much chemistry-oriented the course is. Students also realized that the University of Minnesota does

not require this course only because they do not offer it; but all the jobs and internships that are being advertised for undergraduates both at the University of Minnesota Human Resources as well as the industry sector are requiring the knowledge, skills and competencies introduced in this course! Students also came to get first-hand experience of such expectations from the interviews they attended for the jobs or research fellowships advertised, or by talking to their predecessors of this course who have acquired such jobs/fellowships/internships.

Also, based on the outcomes of Part II-V, before starting Part-VI, students were taken to a field-trip to a FDA-regulated company, where they had the opportunity to see almost everything that they learned in the course “in action” in multiple disciplines such as general chemistry, analytical chemistry, chemical engineering, biomedical engineering, pharmacy, biochemistry, microbiology, electronics, molecular biology, metrology, HVAC and several more areas. One guest speaker session from an academic researcher from a department other than biotechnology from transferring institution was incorporated. Case-study analysis from academic lab scenario was incorporated. These activities and the field-trip brought better realization of “relevancy” and the initial reluctance was overcome. In future semesters, such sessions and field-trip will be incorporated more than once and early on in the semester.

Part-VI also gave an opportunity to work completely independently and take ownership of their project. Creating something live/active molecule prompted a lot of excitement in them. This made them better realize the relevancy of all the things they had learned until this stage and why it was so important to apply them to propose a hypothesis and plan an experiment. This project was an interdisciplinary project involving math, general chemistry, analytical chemistry, biochemistry, microbiology, molecular biology and marine biology and involved various instruments which the students were exposed to, during the semester. As the data suggests, all students were successful in this project. Therefore, this project will be retained for future semesters to come.

Starting Fall 2008, this laboratory course will be combined with the regulatory affairs lecture course, which is anticipated to enable students to better correlate the relevancy of the various hands-on skills that are dependent on critical thinking skills. The assessment will be repeated at that time.

The rubrics for the report-writing need modification. It would be important to draw distinction between writing assessment and critical thinking assessment.

10. Please share any additional comments and/or suggestions for improving this process.

The process although tedious, was very useful. Currently, I do not have any suggestions.

	# of students given assignment	# of students completing task	Below College level**		College Level**		Above College Level**	
			#	%*	#	%*	#	%*
Results of Part II	5	5	2	40	1	20	2	40
Results of Part III	5	5	0	0	3	60	2	40
Results of Part IV	5	5	1	20	2	40	2	40
Results of Part V	5	5	3	60	1	20	1	20
Results of Part VI	5	5	0	0	4	80	1	20
Results of Trial 2 (if applicable)	Not applicable	Not applicable						

*Per cent should be based on the number of students who completed the task (third column).

** Since there are no commonly agreed/defined college level descriptors in this case, I have adopted these terms to fit the needs of the course and for the 2-year program. Please see attached rubrics for what constitutes “college level” for this course. “Above College Level” relates to the competency level after students have taken at least one other higher level laboratory course in the program where the competencies are further emphasized.

Rubrics for Critical Thinking “Embedding” Project: Spring 2008: Biotechnology Lab and Math Skills Course (BIOT 2301 – course number will be changed to BIOT 2320 starting Fall 2008). These rubrics are also part of the assessment for New Course Assessment.

Instructor: Dr. Ganaganur Rekha (alias Rekha Ganaganur)

Part I	Not applicable, since the assignment was intended to be a refresher for students to review the concepts and skills from prerequisites, to be ready for this course, and also to self-evaluate the understanding of new concepts taught in this course before the activities for the next parts.		
Part II	Below College Level	College Level	Above College Level
Ability to determine uncertainty and significant figures	Fails to determine them for any measuring device irrespective of type of device or type of units even after repeated demonstrations and explanations from the instructor	Accurately determines them for those devices and types of measurements with which the student has hands-on experience in handling	Accurately determines them for any device and any given measuring device, based on the principles of uncertainty and significant figures
Ability to design an experiment to determine the precision and accuracy of measurement devices	Neither understands the concepts of precision and accuracy nor has the ability to design an experiment to determine them	Understands the concepts and successfully determines them if a pre-designed experimental protocol is provided	Understands the concepts and designs an experiment to determine the precision and accuracy of measurements
Ability to set-up/handle a device based on its limits of accuracy	Does not comprehend the mathematical relationships and struggles to set it up or handle it appropriately despite repeated help from the instructor; does not make any connections to the types of errors introduced due to incorrect handling	Comprehends the mathematical relationships and sets it up or handles it appropriately after repeated but minimal (two) demonstrations and explanations; identifies the connections to the types of errors introduced, with minimal intervention from the instructor and makes corrections	Comprehends the mathematical relationship without instructor’s help and sets it up or handles it appropriately only after one demonstration by the instructor; lists the possible errors that might occur for types of mishandling and refers to them while using it first time; For further repetitions, handles them independently

Part II	Below College Level	College Level	Above College Level
Ability to choose appropriate device for a given quantity of measurement based on appropriate and allowable “confidence interval”	Does not choose the appropriate device at all, unless instructed even after explanations, lectures and demos	Chooses the correct device after minimal trials/practice analysis (two).	Chooses the correct device after one trial/practice analysis and also checks for its current status of accuracy based on calibration requirements
Ability to construct graphs from the experimental data	Has basic knowledge of graph construction, but the graph has too many errors and not according to criteria required for further statistical analysis that a specific experiment requires	Has basic knowledge of graph construction and constructs it with minimal errors; chooses the appropriate type of plotting when guided with specific questions	Has advanced knowledge of graph construction, no errors and chooses appropriate type of plotting required for further statistical analysis pertinent to the specific experiment
Ability to carry out statistical analysis based on integrating the various information from diverse sources, rather than plugging in formulas on the computer	Does not do any analysis other than what the computer programs by default can provide. Does not know how to interpret the default results.	Carries out the analysis by making appropriate choices of options available, based on the importance of identifying the necessary outcome of results	Carries out the analysis by making appropriate choices of options based on the importance of identifying the necessary outcome of results to accurately determine an unknown. Makes meaningful comparison from two different sources of analysis.
Ability to carry out statistical analysis by choosing appropriate confidence intervals based on underlying principles, determine outliers.	Cannot carry out the analysis only if confidence intervals are provided; cannot determine or decide on outliers.	Carries out the analysis by making appropriate choices and determines outliers only based on given mathematical equations.	Carries out the analysis by making appropriate choices, determines outliers and makes decisions on whether those outliers are to be retained or not, through both mathematical and conceptual understanding.

Ability to interpret the results of statistical analysis of several options of measuring devices to suggest the correct one for a given scenario	Does not make the appropriate choice	Interprets the results correctly and appropriately suggests the correct one for a given scenario.	Interprets results correctly and suggests the correct one for a given scenario. Takes initiative in suggesting possible scenarios where the other device may be useful, and how the one chosen for this scenario may not be useful for those circumstances.
Part II	Below College Level	College Level	Above College Level
Ability to list the possible sources of error	Lists only general sources of error, simply based on text-book knowledge, of which only parts of them might be pertinent to the specific scenario.	Lists specific sources of errors pertinent to the scenario/ experiment, but not all possibilities or not logically based on all “traceability” steps, to have a comprehensive but meaningful corrective and preventive action (CAPA).	Lists specific sources of errors pertinent to the scenario/experiment considering the “traceability” to enable a comprehensive but meaningful CAPA.
Ability to suggest corrective and preventive actions (CAPA)	Suggests only generic actions such as “pay attention”, “follow procedure correctly”.	Lists specific CAPA pertinent to the sources of errors identified above, but not a comprehensive one. However, this is a step in the right direction.	Lists specific CAPA pertinent to the sources of errors identified above, and a comprehensive one.

Gather, synthesize and integrate input from diverse sources and the rigorous analysis of experimental data to produce a written report.	Does not address any of the required sections in the report adequately or accurately, other than methods part.	Adequately addresses all sections of a report that can be derived directly from the data generated from the experiment.	Adequately addresses all sections of the report, draws conclusions and proposes plans for future modifications with sound rationale. Cites relevant examples.
---	--	---	---

Part III	Below College Level	College Level	Above College Level
Draws conclusions from previous experiences to plan the next step of work	Draws incorrect conclusions and makes incorrect plans	Draws correct conclusions and makes correct plans for next step of work. However, the conclusions are limited to next step of work; does not make connections to what lies ahead later and how the next step can affect future processes in a multi-process project.	Draws correct conclusions and makes correct plans for next step of work. However, the conclusions are limited to next step of work; does not make connections to what lies ahead later and how the next step can affect future processes in a multi-process project
Synthesize information from diverse sources and apply concepts and information to make correct choice of chemicals, methods and devices to prepare a multicomponent reagent accurately	Makes incorrect choice of either one of the components or all of the components (chemicals, method or device).	Makes correct choices.	Makes correct choices and suggests ways to adopt alternate procedures if the required resources are not available, without compromising the intended outcome.

Ability to apply previous experiences obtained in different context, to the current context.	Cannot apply previous experiences to handle the devices appropriately due to lack of correlation of what type of mishandling can constitutes errors of which kind and how that will have an effect the accuracy of results in which step.	Applies previous experiences appropriately to the current context.	Applies previous experiences to the current context.
Troubleshooting ability	If intended outcomes are not achieved, identifies some errors, not all.	Identifies the all the possible errors. However, not by logical deductions through “traceability” to increase efficiency with regard to time and resources. However, this is a step in the right direction – better than not being able to track the errors at all.	Identifies errors through logical deducing through “traceability” and troubleshoots them efficiently without wasting time and resources.
Part IV	Below College Level	College Level	Above College Level
Ability to choose a correct option from several options available, appropriate to the sampling required	Chooses correct options only sometimes and only with the assistance of the instructor and a written set of guidelines.	Always chooses correct options when a set of guidelines are provided, but without the assistance from the instructor	Chooses correct options without assistance or written guidelines, based on knowledge, concepts, experience and theories.
Ability to correctly set up a device	Always needs assistance	Needs assistance more than once, to become independent, but not for all devices.	Generally, can independently do it after one demonstration or one opportunity to experience.

Part V	Below College Level	College Level	Above College Level
Ability to interpret experimental data to determine the accuracy of work through graphs	Can construct/plot a graph but not fully according to expectations despite experience and feedback in Part-II.	Can construct the graph fully according to expectations, verifies the accuracy of the work; relates to experience in Part-II.	Can construct the graph fully according to expectations, verifies the accuracy of the work; relates to experience in Part-II; suggests what other conclusions can be drawn about the experimental reaction itself at higher concentrations of the sampling
Ability to identify reasons for incorrect values of “unknown” and suggest methods to improve	Cannot determine the unknown in the first place and does not know how to troubleshoot	Can identify reasons. Suggested methods are applicable but may not be the most efficient.	Can identify reasons. Suggested methods are applicable and efficient, with full application of “traceability” principles.
Ability to compare results from two different sets of data paying attention to the limitations and principles underlying the two methods of arriving at the data	Shows competency just enough to indicate whether they match or not, and that the two methods need to be repeated.	Compares and contrasts the two sets of data. Identifies the reasons, but only based on what seems to be very evident and straight-forward. Cannot explain unexpected outcomes.	Compares and contrasts the two sets of data. Identifies the reasons, irrespective of evident or subtle and can convincingly explain the unexpected outcomes and goes extra step to repeat the experiment to prove or test the reasoning.

Part VI	Below College Level	College Level	Above College Level
<p>Ability to successfully complete a multi-step project with the desired end-result applying/integrating all the competencies, information, concepts and experiences gained prior to the project</p>	<p>Successful only partly, no end-product as per specifications; Will troubleshoot only with assistance.</p>	<p>Successfully gets the end-product. When specifications not met, can troubleshoot independently to meet specifications.</p>	<p>Successfully gets the end-product and can also suggest ways to improve the project process for faster and more efficient methods.</p>

Embedded Critical Thinking Assignments Spring 2008 Report

Please complete and e-mail to KateLynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: _____ *Jane V. Gringauz* _____

Course name and number: _____ *Math1165-01: Math for Teachers* _____

Number of students: _____ *8 finished the course* _____

Intended audience of the class (1st year, 2nd year, other): _____ *2nd year* _____

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?

*The course Math for Teachers is intended for the future elementary teachers and non-math or science upper grades teachers. **One of its purposes is to develop understanding of mathematics as a way of thinking and a system for learning about the world, rather than a set of rules. Another of its purposes is to explore the reasons why the “rules” are the way that they are, and not some other way. Still another purpose it to have the students learn to solve problems in several different ways, to understand the implications of those different ways. This would require them to build connections between topics and techniques in their minds and to articulate and explain the thinking that goes into using each of the methods.***

One way that we do it, is, obviously, by solving problems in class and for homework and discussing them in class. However, another way that I use to expand the students' understanding is by having them read relevant articles and write essays related to them. This semester, the four articles (the first two “for practice”, and the last two “for real”) were “On the Abacus” which I pieced from the web, a Stanford magazine article discussing the virtual reality tools which are being researched and their possible implications, and two lesson analyses from the book Math and Literature (Grades 4-6), by Rusty Bresser, Math Solutions Publications 1995, reprinted 2001.

2. Briefly describe **the assignment. What do students do during** the assignment?

The students take copies of the articles home, read them and then write 2-4 page papers, summarizing what the given article was about, the different approaches the students took, what they discovered, how they (Math1165 students) would check the children's claims, the connections that could be made with other topics. (In other words, this is what happened as

described in the article. If this is what happened in your class, where could you possibly take the class based on what was discovered?)

3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?

*The articles in question each present a “constructivist” lesson designed to teach, among other things, factoring, based on a story. Each lesson described contains many different approaches which the children in the classroom described used to “discover” what the lesson was about, and the comments the teacher made. I wanted to have the students in Math1165 to **gain insight into the lessons described** (which obviously would involve critical thinking), and wanted to have a way to let them know what a “thoughtful analysis” involves (for ex: verifying children’s claims) and what it avoids (for ex: misused math terms).*

*One objective for “gaining insight” would be for them to **develop understanding of mathematics as a way of thinking**. The children in the classroom lessons demonstrate what this means very well. However, the lessons described do NOT have a stated purpose, other than to have the children engage in mathematical thinking, and so I wanted my students to imagine how they could capitalize on a lesson to reach a more concrete(?) objective, like demonstrate to the children **the reasons why the “rules” are the way that they are, and not some other way** by showing them how to check their claims (e.g. making up the wrong “rule” will lead to a contradiction under suitable circumstances, or will not “solve the problem”). In addition, the objective of **solving problems in several different ways** is easily achieved by the children because all groups, if not all individuals, approach the problem presented in different ways, but Math1165 students, as potential teachers, need to demonstrate understanding of the implications of those different ways in terms of where the lesson in question could lead in the following lessons taught to the same children.*

4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)

*The learning outcomes would be to demonstrate the **developing understanding of mathematics as a way of thinking, the understanding of why the rules are the way that they are, and understanding of the possible implications of the different ways in which the children approached the problem.***

In reality, these are cognitive objectives, and not behavioral ones. However, mid-semester, right before the Midterm but before the lesson articles AND at the end of the semester, right before the Final Exam, the students had to “present or teach” several problems (not through constructivist approach, though) solved and explained in several different ways (3 ways for full credit). Therefore, not only the writing was assessed using a rubric – the theoretical “cognitive” objective, but also, the actual “behavioral” objective of being able to present problems based on the objectives above was assessed using a rubric.

5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

*The course description itself contains the words "...understanding that **mathematics is a way of thinking**, ...[and not a bunch of rules to follow]". The words in brackets I paraphrased because I do not have the actual description immediately available, but the words used are similar. The Lesson Analyses Papers and the Problem Presentations are both exactly in line with the description.*

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

I had rubrics for both assignments because I thought that telling the students what is desired of them may be helpful. I found out that the rubrics I had did not yield the scores I intuitively felt the students earned ("A-" papers would frequently earn "Cs", and some of the "Cs" appeared to be "Bs"), but the oral presentation rubrics were alright because the oral presentations were in general good to excellent in the previous two classes I taught.

I had Linda Russell comment on the rubric from the first time, and amended it to include "...which may include some, but not all of such and such" and an extra category for spelling, because misspelled mathematical terms were the rule, rather than the exception, not to mention other inappropriately spelled words, like "there" instead of "their" – really important to get right if you are teaching kids. They were better, but I still felt like I was "stretching the rubric" to come up with the "right score".

I had the rubrics further critiqued by KateLynn Hibbard (and ?, I am not sure if anyone else looked at them), and removed the inconsistencies, such as using "the paper" for the "at College Level" and "the presentation" in the "Exceptional Proficiency Level" = "Above College Level", and also clarifying how the outcomes would be measured, such as stating that "using correct mathematical terms to match the context most of the time" is College Level, whereas using them "all the time or nearly all the time" is Above College Level, as well as added the "context awareness" as a pre-requisite for the Above College Level work. Otherwise, many students were writing as if they were trying to explain the problems to me, but not in connection to how they would use the understanding in the classroom.

The new rubrics worked much better for me. Probably, in part because of the very informative discussions we had during the meetings, which enabled me to understand rubrics much better, and to come to terms with their inherent flaws, but also to appreciate the flexibility of the design.

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?

The students do get better at writing as they do more of it. Just like the students get better at presenting and explaining problems solved by different methods: the average presentation score was 45.5/50 (92%) the first time and 47.125/50 (94.25%) the second time.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

The embedding allowed me to have the unparalleled support of the colleagues from other departments, which expanded my understanding of what a rubric is and what it may contain. I will use rubrics for assignments in other courses to let the students know what is expected of them more clearly. For example, I was unhappy with the stats. students description of what a given correlation coefficient value MEANS, but now I wrote a rubric (did not yet type-up), which indicates that I am looking for 5 specific things. If they are present and correct, the answer earns 5 points, otherwise, they lose a point per “outcome” in the rubric.

9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

I would change the rubrics to include using one’s personal experience in discussing the papers as worthy of points as “contextual awareness”, and possibly as one more way to solve the problem, if that is included in the “personal experience”. Otherwise, I would pretty much structure the class the way it has been structured because the problem presentations and Final exams were excellent.

10. Please share any additional comments and/or suggestions for improving this process.

*Just like the rubrics themselves, no process is perfect, but this was as perfect as they come as far as meeting **my** needs. I would suggest having a coordinator, doing what KateLynn Hubbard did, in the future, because without one the process may degenerate.*

	# of students given assignment	# of students completing task	Below college level		College level		Advanced level	
			#	%*	#	%*	#	%*
Results of Trial 1	9	7	1	14%	3	43%	3	43%
Results of Trial 2 (if applicable)	8	6	0	0%	1	17%	5	83%

*Per cent should be based on the number of students who completed the task (third column).

**Embedded Critical Thinking Assignments
Spring 2008 Report**

Please complete and e-mail to KateLynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: _____ *Haile K. Haile* _____

Course name and number: _____ MATH 0070 Introductory Algebra _____

Number of students: _____ 25 _____

Intended audience of the class (1st year, 2nd year, other): _____ 1st _____

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?

Math 0070 is our first (lowest level) algebra course. In it, students learn how to solve and graph linear equations and linear inequalities, how to graph quadratic equations and how to add and multiply not just rational numbers but irrational numbers and polynomials too. They also learn about negative exponents.

I chose MATH 0070 for embedding because it is students' first transition from arithmetic facts to algebraic generalizations. I wanted to promote critical thinking to them as early in their mathematical training as possible.

2. Briefly describe **the assignment. What do students do during** the assignment?

Throughout the course, students were told to NOT view formulas as substitutes for critical thinking. Thus I presented such facts as "The product of two negative numbers is negative" and " $2^0 = 1$ " **with justifications**. I also encouraged students NOT stop at getting correct answers to questions and to go back and find out why other method(s) that they had tried would/wouldn't have worked. Also promoted were the virtues of being less reliant on calculators and of qualifying (describing) solutions to problems before they are actually found.

In the end, I gave them a list of simple questions to answer as well as they could. These questions were based on ideas that I presented during the semester.

3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?

Students realize that mathematical critical thinking is rooted, in part, in developing a feel for the integers (which is what excessive dependence on calculators kills).

They see fallacies in such statements as “Every four-sided figure that has four equal sides is a square”.

They can predict (qualify) solutions to mathematical problems without completely solving the problems.

4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)

They should become less reliant on calculators.

They should also be able to make reasonable qualifications of solutions to problems before they are found.

They learn to read mathematical statements carefully and accurately.

5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

Our Department defines critical thinking in Math 0070 mainly as fluency in elementary algebra (by implication, in arithmetic too). This fluency has a high correlation with the ability to describe solutions to mathematical problems without actually finding them.

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

As my embedding was an interactive, continuous and semester-long project, I chose not to use a rubric.

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?

Students’ desire to grasp mathematical formulas and concepts has showed an increase. Also enhanced is their ability to catch their mistakes. Their tendency to skip steps seems to have decreased.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

As all of the questions required essentially the same level of critical thinking, I measured critical thinking with the percentage of questions that were answered correctly.

- Below College: Less than 50% of the questions were answered correctly.
 - College level: At least 50% of questions were answered correctly.
 - Advanced level: At least 75% of the questions were answered correctly.
9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

I can improve student learning for future assignments by coming up with additional critical questions on each chapter. This may well be the best that I can do while we still use our current Math 0070 textbook.

10. Please share any additional comments and/or suggestions for improving this process.

I have none. It is a good process as it is.

	# of students given assignment	# of students completing task	Below college level		College level		Advanced level	
			#	%*	#	%*	#	%*
Results of Trial 1	25	25	6	24	16	64	3	12
Results of Trial 2 (if applicable)								

*Per cent should be based on the number of students who completed the task (third column).

Embedded Critical Thinking Assignments Spring 2008 Report

Please complete and e-mail to Kate Lynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: *Ranae Hanson*

Course name and number: British Literature 2, online, spring 2008; ENGL 2252, section 29 compared with British Literature 1, online, fall 2007; ENGL 2251, section 29

Number of students: 24, ending of 2251; 20, ending of 2252

Intended audience of the class (1st year, 2nd year, other): 2nd year

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?

This course has a Global Education transfer number. I want to make sure that students are understanding the global and cross-cultural aspects of the course. As a start, I want to ensure that students know, broadly and generally, what we mean when we talk about “cultures” and that they are able to compare literature, topics, and orientations between different cultures.

2. Briefly describe **the assignment. What do students do during** the assignment?

In the Web Page Assignments, students must take a work of literature, select a theme that work addresses, and relate that work and the theme to several other works of literature we have read. As one aspect of the assignment, they must discuss the connections (similarities and differences) between the various cultures represented in the readings. This is the aspect that I focused on for the assessment.

3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?
 - Students will learn that people who are part of one cultural group may have different attitudes, assumptions, and concerns than people of another cultural group.
 - Students will explore ways that writers’ cultural attitudes affect and are revealed through the literature that they write.

- Students will develop their abilities to look at a work of literature from the perspectives of varied groups of people.
 - Students will be able to articulate ways that the reactions of people to a work of art are influenced by the cultural groups those individuals are part of, not just by the unique attitudes of those individual people.
4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)
- Students must overtly mention various cultural groups in their Web Page Assignment.
 - Students must give examples from literature of statements that express a writer's cultural affinities.
 - Students must compare the literature and attitudes of one cultural group with another.
 - Students should consider cultural differences between people who speak and write in English in various countries and between various classes of English-speakers in England.
 - Students should write about the affects of a piece of literature on the conditions of people from varied cultures.
5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?
- Critical Thinking, Reading, and Writing – Ability to think critically and effectively solve problems. Students will*
- Use writing and reading as tools for problem-posing and -solving;
 - Explore and develop ideas through reading and writing;
 - Recognize the connections between audience, purpose, and context.
6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

I had a rubric already designed for the Web Page assignments. Because I felt that the students were lost in their attempts to speak about cultural differences when they completed the first Web Page assignment, I devised an intervention in the form of a Web Page Planning Form that I used the next semester before having them do a Web Page

assignment. (I'll attach the assignments, the rubric, and the planning form.) I did not change the rubric because I wanted to see if students scored higher on the "cultural connections" requirement of the rubric the semester when I had them complete the Planning Form first.

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?

Of course, these numbers are too small to draw any solid conclusions. In addition, the changes are not huge. However, the percentages of students whom I judged to be at or above college-level on the first web page assignment were 50% after the intervention as opposed to 36% before. In addition, when I looked back on my grading rubrics for both classes, I detected clear indications that I was more liberal with the first set of students (before the intervention) because I was feeling responsible for their lack of knowledge. It was while I graded those first web pages that I realized that the students did not know what I meant when I asked them to consider cultural influences and to compare different cultural groups. When I feel that the lack of demonstrated knowledge on students' parts is due to inadequate teaching on my part, I tend to grade more liberally. In addition, I was more firm with the second set of students because I felt that they had been instructed about culture and had had opportunity to discuss with one another and with me ways to observe cultural influences; I was more firm with them in hopes of waking them up to the importance of this aspect for their second web page assignment. Therefore, I suspect that there actually was an even greater difference between the performance of the two groups than the data reveal.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

Having the students do a planning assignment that was given substantial weight and which took them through the process necessary to making a solid first web page assignment shocked a good number of them into a recognition of how much up-front work they needed to do in order to compare and analyze works of literature. Much as I teach drafting when I'm teaching a writing course, I taught them, through this form, some of the ways to pre-write, think about, draft, gather information, and organize for the finished assignment.

9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

I need to add a definition of culture to the course. I've got to make that prominent and to include lecture material (probably in voice files) so that students can find it easily. I need to adapt the rubric to make more clear whether they need to address in-country cultural diversity as well as out-of-England-proper cultural diversity. I want to have lists available to them that identify some writers by cultural group affinities. Students who have

awareness of cultural difference and students who are ready to learn quickly do well with the material I have given them and are able to notice cultural affinities in writers, but students who struggle are not getting enough support yet from the material I'm giving them.

10. Please share any additional comments and/or suggestions for improving this process.

	# of students given assignment	# of students completing task	Below college level		College level		Advanced level	
			#	%*	#	%*	#	%*
Results of Trial 1	26	25	16	64%	6	24%	3	12%
Results of Trial 2 (if applicable)	23	20	10	50%	5	25%	5	25%

*Per cent should be based on the number of students who completed the task (third column).

Embedded Critical Thinking Assignments Spring 2008 Report

Please complete and e-mail to KateLynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: *Virginia Heinrich*

Course name and number: INFS 1200 – Introduction to Technical Information Services

Number of students: 11

Intended audience of the class (1st year, 2nd year, other): 1st year,

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?

In this course, I want students to:

- Have a basic understanding of the work areas in library technical services including job tasks and contemporary issues in the field
 - Make connections between tasks in the library and related work outside of the library
 - Know how to use their texts and other readings from within and outside of assigned readings to build on what they're learning
 - Understand that there are external resources such as professional associations or discussion forums on which to draw for knowledge
2. Briefly describe **the assignment. What do students do during** the assignment?

Students take one assigned reading besides their text and are asked to write an abstract for the reading following NISO Guidelines for Writing Abstracts and then write an analysis of the article.
 3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?

My assignment goals:

1. Give students practice following a standard to create content

2. Help students separate summarizing content from analyzing content
 3. Encourage students to develop some depth of reflection on a particular issue
 4. See if students are making connections between the readings, discussions, and personal experiences.
4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)

Students should be able to demonstrate connections between their reading and other course content. They should also be able to write a concise, precise abstract based on standards.

5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

Developed by the Information Studies faculty

Approved: 8 March 2007

What we want our students, across all of our courses, to be able to do:

- Put knowledge, or information, into a context
- Analyze information or knowledge and reflect on the content
- Apply skills and knowledge to situations appropriately: “Bring life experiences to class and class experiences to life”
- Identify relationships between learning elements and integrate them effectively
- Develop an understanding of the social and ethical frameworks in which information is created, organized, distributed, used, and contested.
- Build a sense of integrity and commitment to quality in how one regards information in personal and professional settings

In particular, this assignment draws on the following elements from the above definition:

- Put knowledge, or information, into a context
- Analyze information or knowledge and reflect on the content
- Identify relationships between learning elements and integrate them effectively

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

I designed a rubric for this assignment last year for a previous critical thinking embedding project. I revised the rubric to clarify elements based on previous student performance. College-level critical thinking was defined as what I would expect from a co-worker. As our program is designed to train library technicians and paraprofessionals,

I could use our own workplace expectations for our library technicians in some regard as a basis for determining college-level. In addition, I looked at other rubrics from last year's critical thinking embedding report for appropriate language to incorporate.

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?

A couple of things are striking to me: 1) the number of students who did not turn in the 3rd assignment and 2) the number that did turn in the 3rd assignment but did poorly. Last year's results showed a decline in scores in the 3rd assignment so I was particularly careful about the timing of the due date of the assignment to ensure it didn't conflict with other class assignments. Nonetheless, anecdotal evidence from students supports the hypothesis that the third assignment is still in conflict with other assignments. However, I'm more suspicious that this may be related to other student courses than this one course. Of those students that did turn in all three assignments, all performed at or above college-level.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

In reviewing my assignment objectives for this project, and reviewing the results, I'm less convinced that I'm teaching critical thinking skills in this series of assignment than measuring whether or not students already have the skills and can build on those skills. Students 4 and 6, who both showed the most improvement between assignments 1 and 2 did not complete assignment 3, which would have helped me reflect on actual teaching I am (or am not) doing. Other students stayed roughly even between assignments 1 and 2, and students 3 and 7 showed significant declines between assignments 2 and 3.

9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

I'm going to restructure the series of three assignments into a more sequential progression of tasks, with assignment 1 being a more structured introduction to the type of analysis and elements I'm seeking. Assignment 2 will be less structured, and assignment 3 won't provide any such scaffolding. I will again review the timing of the assignment for other conflicts with course assignments, but as mentioned above, I suspect conflicts may have to do with other courses and not this particular course, which I can't control. I will also look at making the points progressive through the three assignments, to add more weight (and motivation) to the third assignment. Currently each assignment is worth 5 points. Changing to a sequence of 3-5-7 would emphasize the later assignments, and minimize the impact of the first assignment which is primarily a learning exercise.

10. Please share any additional comments and/or suggestions for improving this process.

The faculty embedding projects are a valuable way of looking at aspects of teaching to improve student learning. Sharing between colleagues is an excellent of ensuring consistency across disciplines and the facilitated meetings led by faculty provide a low-risk/high-reward environment for communication. Providing multiple ways to communicate – face-to-face as well as online using Google Groups – was a great addition for those that can't always make the meetings. Thank you, KateLynn for leading this effort this year!

Embedding Project Data

	# of students given assignment	# of students completing task	Below college level ($\leq 69\%$)		College level (70-79%)		Superior ($\geq 80\%$)	
			#	%*	#	%*	#	%*
Results of Trial 1	11	10	0	0%	1	10%	9	90%
Results of Trial 2	9	9	0	0%	0	36%	9	100%
Results of Trial 3	9	6	2	33%	1	17%	3	50%

*Per cent should be based on the number of students who completed the task (third column).

I thought, for me, it would also be useful to look at individual student performance over the succession of assignments.

Student	Paper 1	Paper 2	Paper 3	Average percentage	Average level of performance
1	98%	98%	96%	97.33%	Superior
2	98%	94%	0	96% (64%)	Superior
3	81%	81%	59%	73.66%	College Level
4	85%	100%	0	92.5% (61.67%)	Superior
5	96%	96%	74%	88.67%	Superior
6	70%	96%	0	83% (55.33%)	Superior
7	80%	80%	67%	75.67%	College Level
8	95%	96%	98%	96.33%	Superior
9	94%	96%	96%	95.33%	Superior
10	79%	X	X		<i>Dropped class</i>

INFS 1200 Introduction to Technical Information Services Abstract/Analysis Papers

Select one reading other than those from the required text book from the period noted in the course syllabus. Provide an MLA-style citation for the reading you've selected, write an abstract of that reading, and an analysis of the reading.

Your abstract should reflect the ANSI/NISO [Guidelines for Abstracts](http://www.niso.org/standards/resources/Z39-14.pdf) (<http://www.niso.org/standards/resources/Z39-14.pdf>) for included elements and length.

At a minimum, your analysis should include elements of the following.

- Reflection on how the reading relates to:
 - information presented in your text;
 - personal work experiences you may have had;
 - discussions we've had in class.
- Application of the reading to your current or future work setting;
- Evaluation of any statistics or other findings presented.

Any references to other works should be appropriately cited using MLA (Modern Language Association) style or another style (clearly state which one).

Formatting requirements:

- Use a serif font such as Times New Roman.
- Use a font size no smaller than 10 points and no larger than 12 points.
- Use ample and appropriate white space.

My expectations are that an abstract will meet the ANSI/NISO standards for length appropriate to the type and length of article, and the analysis will be about 750-1250 words. Refer to the grading rubric for additional information.

INFS 1200
Abstract/Analysis Papers
Grading Rubric

Area	Excellent	Satisfactory	Needs Work	Points Given	Comments
Abstract 1 points	<ul style="list-style-type: none"> Abstract meets ANSI guidelines for length and content Little or no unnecessary information is included 	<ul style="list-style-type: none"> Abstract meets ANSI guidelines for length Provides basic information about the article 	<ul style="list-style-type: none"> Abstract too long or too short, based on ANSI guidelines Does not include necessary content 		
	1	.75	0-.5		
Analysis 3 points	<ul style="list-style-type: none"> Information synthesized from article, demonstrating reflection. Interprets article content to bring new insight Relevant and specific information, from other course readings is integrated, along with personal experiences 	<ul style="list-style-type: none"> Includes information from article to demonstrate an understanding of the topic, though the understanding may be somewhat limited Presents a perspective and supports it with information from course readings and personal experience Content is generally focused on topic 	<ul style="list-style-type: none"> Content from article is summarized, with little or no analysis or synthesis of the content. Little or no critical reflection on the content presented in the article Little or no new insight presented to the reader Contains unnecessary material 		
	3	2.25	0-2		
Mechanics 1 point	<ul style="list-style-type: none"> Citation follows MLA citation style No spelling or grammar errors Overall length meets expectations 	<ul style="list-style-type: none"> Citation follows MLA citation style with minor errors Minor spelling or grammar errors not affecting understanding Overall length less than expectation 	<ul style="list-style-type: none"> Citation does not follow MLA citation style Spelling and/or grammar errors that interfere with understanding Length significantly less than expectation 		
	1	.75	0-.5		

Embedded Critical Thinking Assignments Spring 2008 Report

Please complete and e-mail to KateLynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: _____*Kate Lynn Hibbard*_____

Course name and number: _____English 1111, College English 2_____

Number of students: _____12_____

Intended audience of the class (1st year, 2nd year, other): _____2nd year_____

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?

Relevant course objectives:

- Synthesizing, analyzing, and presenting information
- Finding, choosing, and using research sources for information and to develop your own ideas
- Identifying and controlling writing contexts in terms of audience, topic and purpose

Students in this course use numerous critical thinking skills throughout the term toward the final objective of researching and writing a longer paper.

2. Briefly describe **the assignment**. **What do students do during** the assignment?

Students read closely a source they are using for their research and then answer a series of prompts which require them to practice skills of synthesis and analysis, both in terms of the reading itself and its relationship to their understanding of their research question.

3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?

Students learn and practice skills in content and context awareness, as well as how to synthesize and analyze the work of other writers

4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)

See rubric (attached)

5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

Critical Thinking, Reading, and Writing – Ability to think critically and effectively solve problems. Students will

- Use writing and reading as tools for problem-posing and -solving;
- Explore and develop ideas through reading and writing;
- Recognize the connections between audience, purpose, and context.

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

I used my course objectives to develop the rubric. These objectives have guided all the rubrics I've used for this course. I began using a rubric after participating in the Critical Thinking Caucus in 2006-07. I based my descriptors in part on the MCTC definition of critical thinking. The rubric should have made it easier for students to anticipate how they were being evaluated. It made me more deliberate about how I covered this course material prior to the assignment.

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?

All students achieved college level in the first three categories (content, context, synthesis/analysis). The large number of student who did not complete the task is troubling. This assignment comes fairly late in the paper process, and a number of students were behind by this point in the semester and did not complete this assignment, either because they had procrastinated or because they felt they lacked the skills to complete the task.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

The rubric should have made it easier for students to anticipate how they were being evaluated. It made me more deliberate about how I covered this course material prior to the assignment.

9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

I will provide students with more opportunities earlier in the course to practice these skills in a lower stakes environment.

10. Please share any additional comments and/or suggestions for improving this process.

n/a

	# of students given assignment	# of students completing task	Below college level		College level		Advanced level	
			#	%*	#	%*	#	%*
Results of Trial 1	18	12	0	0	9	75	3	25
Results of Trial 2 (if applicable)								

*Per cent should be based on the number of students who completed the task (third column).

Research Exercise 7: Working Closely with One Source

Name: _____

Grading Criteria	Excellent 3.6-4	Satisfactory 2.8-3.5	Developing 0-2.7
Content awareness:	<ul style="list-style-type: none"> • Strong evidence of reading comprehension • Frequent specific & relevant references to text 	<ul style="list-style-type: none"> • Some evidence of reading comprehension • Several specific and relevant references to text 	<ul style="list-style-type: none"> • Occasional or no evidence of reading comprehension • Few specific and relevant references to text
Context awareness:	<ul style="list-style-type: none"> • Strong evidence of understanding writer, audience and context • Able to relate text to personal research process 	<ul style="list-style-type: none"> • Some evidence of understanding writer, audience and context • Able to relate text to personal research process 	<ul style="list-style-type: none"> • Little evidence of understanding writer, audience and context • Unable to relate text to personal research process
Summary, synthesis & analysis	<ul style="list-style-type: none"> • Summary is clear, succinct, objective, and shows source's relevance to research essay • Clearly identifies and fully explores key issues related to research essay 	<ul style="list-style-type: none"> • Summary is succinct, objective, and shows source's relevance to research essay • Identifies and explores issues primarily related to research essay 	<ul style="list-style-type: none"> • Summary is wordy, subjective, vague, and does not show source's relevance to research essay • Does not identify or explore key issues related to research essay
Format, style and organization:	<ul style="list-style-type: none"> • Follows all steps of assignment accurately • Language is always precise • Writing is well-organized and easy to follow throughout 	<ul style="list-style-type: none"> • Follows most steps of assignment accurately • Language is mostly precise • Writing is mostly well-organized and easy to follow 	<ul style="list-style-type: none"> • Does not follow steps of assignment accurately • Language is somewhat or frequently vague • Writing is poorly organized and difficult to follow
Grammar and mechanics:	<ul style="list-style-type: none"> • Few or no usage errors detract from the reader's enjoyment and comprehension of the writing 	<ul style="list-style-type: none"> • There are some problems but they do not seriously detract from the reader's enjoyment and comprehension of the writing 	<ul style="list-style-type: none"> • Frequent problems seriously detract from the reader's enjoyment and comprehension of the writing

TOTAL: _____ of 20 points

Research Exercise 7
Working Closely with One Source

Name: _____

(adapted in part from Bruce Ballenger’s *The Curious Researcher*)

1. Choose ONE of your sources that you plan to use for your Research Essay. Record its bibliographic information in MLA format (if you’re not sure what you need to record here, check the *Bedford Handbook*, starting on page 624).

2. Answer the question “What strikes me most about this reading?” by responding to at least **THREE** of the points below:

- What do you think is the most important thing the writer is trying to say?
- What surprised you most? What do you remember best?
- Which ideas or arguments seemed most convincing? Least convincing?
- What other research possibilities does the source suggest?

3. Choose **FIVE** specific quotes, summaries, or paraphrases from the source and do a double-entry journal (see below):

NOTES FROM SOURCE	FASTWRITE RESPONSE
<p>In this column, collect direct quotations, paraphrases, and summaries of key ideas that you cull from your source</p> <p>Collect material that’s relevant to your project, but also write down passages, facts, and claims from the source that you find surprising or puzzling or that generate some kind of emotional response in you</p> <p>Make sure you write down this material carefully and accurately</p> <p>Don’t forget to include the page number from the source to the left of the borrowed material or idea: you’ll need it for your draft, & it’s a lot easier to write it down the first time.</p> <p>(NOTE: Don’t worry about making this look beautiful in the two-column format!)</p>	<p>In this column, think through writing about some of the information you collected in the other column. Don’t worry about correcting your grammar or spelling at this point; get your ideas down fast, but stay focused.</p> <p>Try shifting between two stances: believing and doubting. Spend a few minutes writing about the possible good points of the author’s ideas, assertions, and data. Then spend a few minutes writing about questions, doubts, disagreements or counterclaims.</p> <p>Questions to consider in this column:</p> <ul style="list-style-type: none"> • What grabs my attention? What is surprising? • What are my first thoughts? Then what? Then what? • What else does this make me think of? • How would I challenge this author’s claim? How do I agree with it? • What else have I read that connects with this information? • How do I feel about this information?

4. Summary and synthesis: briefly summarize what this source says about your topic, and why it's important to your Research Essay.

5. Synthesis and analysis: Fill in the blanks and write a paragraph about how this source has affected your ideas about your research question – “Before I started reading this source, I thought _____, but now I understand that _____. That makes me think _____.”

Embedded Critical Thinking Assignments Spring 2008 Report

Please complete and e-mail to KateLynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: _____*Jennifer Jakubic*_____

Course name and number: _____ESOL 0042 Reading 4_____

Number of students: _____16_____

Intended audience of the class (1st year, 2nd year, other): _____below college level/1st year_____

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?

Three major objectives for this reading course are to learn to interpret fiction, articulate connections between readings and personal experiences, and to summarize and paraphrase readings. The interpretation of fiction and the articulation of connections between readings and personal experiences involve critical thinking as our department defines it.

2. Briefly describe **the assignment. What do students do during** the assignment?

During the assignment, the students study a short story and are then asked to summarize, interpret and respond to the story, giving examples from the text to support both the interpretation and the response.

3. List three to five major **objectives for your embedded assignment.** (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?

The purpose of the assignment is for the students to practice summarizing, interpreting and responding to fiction. It is a chance for them to receive feedback on their abilities (see below) as well as on their understanding of what they read.

1. Which details belong in a summary and which do not
2. How to paraphrase
3. How to interpret and explain the author's intent
4. How to support an explanation of the author's intent with details from the story

5. How to relate a story to one's personal experience
 6. How to support a personal response with details from the story
4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)

Students should show that they understand the difference between summarizing, interpreting and responding to fiction. They are expected to be judged competent in their completion of at least two of the three tasks (see attached rubric). From the feedback they receive on the assignment, students can see what areas they need more practice with in the future.

5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

Critical thinking as it relates to fiction in ESOL 42 is defined as the ability to analyze and interpret text in order to judge the intent of the author and to create and support a personal connection to the reading.

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

This rubric is one I started during Critical Thinking Advocate training last spring, and I finished it this semester with this assignment in mind. The rubric was originally designed for a similar assignment at a higher level in our curriculum, so changes were made to reflect the level of expectation at this level. In the past I did not use a rubric for this assignment. Using a rubric will make the grading more consistent and will make it easier to give the students useful feedback. The rubric makes the teaching of critical thinking more explicit and more intentional.

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?

The five students who I determined were at college level scored in the "accomplished" level on the rubric in either their interpretation or response, but not both. The two students who were advanced scored "accomplished" for both the interpretation and the response. Since the students are high school students and enrolled in a reading course that is two levels below college level in terms of language comprehension, I think the results are good. With more exposure to college coursework (even at the developmental level), they will improve their critical thinking skills. It is a task many of them have had little experience with, having been in the United States only a few years. Also, the students who did not perform at college level still did fairly well. No one received a score below 70% of the possible points on the rubric.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

I can see now that the students need more practice synthesizing the material in the reading with ideas/events from their own experience. In the future I will give them more practice and feedback in this area as many students failed to draw connections between the experiences they described and the events/ideas in the text. They often left it to the reader to intuit the connections they intended rather than stating them directly and giving examples from the text. Thus, they may have been thinking critically, but they failed to give good evidence of it.

9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

Especially with ESL students, it is helpful to give concrete examples of what you are asking them to do. We did spend time in class creating an example together as a group, but in the future I would spend more time looking at finished examples and scoring them together with the rubric so that students have a clear understanding of what the expectations for the assignment are. I would also work on the ‘response’ portion of the assignment, perhaps offering choices as to how to respond, such as a synthesis, opinion, or character analysis/comparison. There are many ways to think critically about fiction and many ways to respond to it, and I feel that this assignment may have been too narrow. Of course, then the rubric would need to be modified to account for the different choices.

10. Please share any additional comments and/or suggestions for improving this process.

	# of students given assignment	# of students completing task	Below college level		College level		Advanced level	
			#	%*	#	%*	#	%*
Results of Trial 1	16	14	7	50%	5	36%	2	14%
Results of Trial 2 (if applicable)								

*Percent should be based on the number of students who completed the task (third column).

Reading and Responding to a Short Story

Directions: Read the story carefully. After you understand it well, complete the assignment below.

Summary: Write a one paragraph plot summary of the story. Describe in your own words what happened from beginning to end. Include all the important events. Do not include unnecessary details. Do not copy sentences from the story.

Interpretation: Write a one paragraph interpretation of the essay. What was the theme or message from the author? Give at least two examples from the story to support your interpretation.

Response: What is your personal response to this reading? Write a one to two paragraph response describing how your own life connects to the events of the story. Discuss at least two examples from the story and how they relate to your personal experience.

Evaluation of Comprehension and Critical Thinking

	Summary	Interpretation	Response	Communication
Accomplished	<ul style="list-style-type: none"> -Summary gives evidence of complete comprehension of the text. -Summary avoids unnecessary details. -Summary is paraphrased (in student's own words). <p style="text-align: right;">6</p>	<ul style="list-style-type: none"> -Interpretation is well explained and shows understanding of the purpose of the text. -Interpretation is well supported and includes at least two relevant examples from the text. <p style="text-align: right;">6</p>	<ul style="list-style-type: none"> -Response includes a description of relevant personal experiences. -Response includes an explanation of how those experiences are related to the reading. -Response includes at least two examples from the text which clearly relate to the student's reaction. <p style="text-align: right;">8</p>	<ul style="list-style-type: none"> -Writing is clear and logically organized. -Writing includes no or few grammatical or word choice errors. -Errors do not detract from the message. <p style="text-align: right;">5</p>
Competent	<ul style="list-style-type: none"> -Summary gives evidence of comprehension of the text, but one or two important events are omitted or misunderstood. -Summary includes two or three unnecessary details. -Summary is mostly in the student's own words. <p style="text-align: right;">5</p>	<ul style="list-style-type: none"> -Interpretation is not fully explained but shows understanding of the purpose of the text. -Interpretation is supported and includes a relevant example from the text. <p style="text-align: right;">5</p>	<ul style="list-style-type: none"> -Response includes a description of relevant personal experiences. - Response includes an explanation of how those experiences are related to the reading. -Response includes one or two examples from the text. -At least one of the examples clearly relates to the student's reaction. <p style="text-align: right;">6</p>	<ul style="list-style-type: none"> -Writing is mostly clear and logically organized. -Writing includes some minor grammatical or word choice errors. -Although errors occasionally detract from the message, the main points are still clear. <p style="text-align: right;">4</p>
Developing	<ul style="list-style-type: none"> -Summary gives evidence of some understanding of the text, but many important events are omitted or misunderstood. -Summary includes more than three unnecessary details. -Summary is mostly copied from the text. <p style="text-align: right;">3</p>	<ul style="list-style-type: none"> -Interpretation does not show understanding of the purpose of the text. -Interpretation is not well explained. -Examples from the text are omitted or not clearly related to the interpretation. <p style="text-align: right;">3</p>	<ul style="list-style-type: none"> -Response may or may not include a description of relevant personal experiences. - Response does not clearly explain how those experiences are related to the reading. -Response does not include relevant examples from the text which clearly relate to the student's reaction <p style="text-align: right;">4</p>	<ul style="list-style-type: none"> -Writing is illogically organized or the organizational pattern is not evident. -Writing contains numerous grammatical and/or word choice errors. -Errors detract from the overall message. <p style="text-align: right;">2</p>

Embedded Critical Thinking Assignments Spring 2008 Report

Please complete and e-mail to KateLynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: Michael Kissin

Course name and number: **THTR 1161-70: TOPICS: GUTHRIE THEATER**

Number of students: **41 students to be evaluated** of 43 originally enrolled (2 LDA withdrawals)

Intended audience of the class (1st year, 2nd year, other): **all students campus-wide**

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?
 - To learn about the Guthrie Theater's history, mission, artistic goals, current season of play, and its place in local, regional, national and international professional theater.
 - To learn about the process of taking a play from "page to stage."
 - To learn how to articulate a personal response to seeing a Guthrie Theater play performance by writing a play review.
2. Briefly describe **the assignment. What do students do during** the assignment?

The assignment: Write a 1000-word, minimum, play review. Students learn in class through lecture and discussion the form and function of play reviews in print media. They get a two-page format to use, which is covered in class by reading an "A" graded example from a previous class in conjunction with the content of the format. They are coached on how to take notes during the performance and immediately afterward. They can take home a previous "A" graded example if they wish. (some do; some don't) They go see the play in performance, and then compose the 1000-word minimum assigned length play review (no penalty for longer than 1000 words) from their notes taken before, during, and after seeing the performance.

I was attracted to the idea of helping students better to collect and synthesize an abundant amount of reactions and observations gathered swiftly in random order during and immediately after watching a Guthrie play performance, and organizing their thinking into a sequenced formatted personal response similar to a newspaper play review. I want to focus on the play review assignment, which practically all our courses require. I want to get more

students writing a decent play review, and I think it is the *synthesis stage* that could use an improved assignment.

3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?
 - a) Follow the play review format. I have a good 2-page format/guideline for student to write their final product, the play review, refined over many years.
 - b) I am seeking a “pre-write” organizing function, some kind of pre-writing worksheet to help synthesize the wildly random reactions/observations forced on them by the process of watching and reacting/evaluating a play in performance
 - c) I want more student to attempt and complete a play review, no matter how imperfect the outcome. I want to give more A’s and B’s, and not so many C’s, which is the result of not doing the play review.

4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable**.)
 - In general terms, simply to complete and submit a play review by the deadline.
 - More specifically:
 - a) Content Awareness: Articulate a written personal response to the play and the production in 5 separate sections of the play review with frequent and relevant references to the script and the production elements as evidence.
 - b) Context Awareness: Point of View: Demonstrate ability to write a review for a reader who has not seen the performance and is not familiar with the script.
 - c) Format and Organization: Understand and follow the specific 5-section sequenced format for organizing the review.

5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

In its current state our program/discipline’s (Theatre Arts Department) learning outcomes language defines college level critical thinking in broad language outside the MCTC

campus-wide definition. I have added italics to the current pertinent language taken from the body of the larger statement:

*“To instill in our students a lifelong appreciation for the theatre arts and an understanding of the vital role that the performance arts play in adult community life. *Students must learn to analyze, evaluate, and extract meaning from their theatre experiences as performers and as audience members, and communicate in written and oral form the content of their thinking...*”*

It is my intention to clarify further the language/definition of critical thinking as part of this year’s assessment work, to include more language from the campus-wide definition.

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

I designed a scoring rubric with the generous assistance of KateLynn Hibbard to include the 3 learning outcomes listed in question #4 above and assigned 15 total points: 5 points for each of the 3 outcomes. I converted the scores to a letter grade equivalent. No, I had not used a rubric to evaluate play reviews prior to this project. The descriptors evolved through discussion of the expected learner outcomes and generous borrowing from model rubrics supplied by Kate and other caucus participants. I did not show the rubric to the students. But the core of this effort lay in a new form I gave to students: I developed a two-page prewriting checklist for students to use to make certain, as they drafted the review, that all required content elements were included in each of the sequenced 5 sections of the play review format. As an incentive to use the checklist I offered students a ½ grade upgrade if they submitted their completed checklist, attached to the back of their play review. The scoring rubric did not have an impact on the assignment aside from clarifying in my own mind exactly what I was looking for in the review, but the checklist fulfilled my primary intention of smoothing the pathway from raw, disorganized student impressions/reactions/descriptions to a finished submitted play review by the deadline.

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?
 - 83% of students who wrote and submitted the play review demonstrate written critical thinking skills at college level or very advanced college level.

- Of the 17 % below college level in written critical thinking skills, 3 of the 5 were clearly ESL students, still struggling to communicate in English in both written and oral form.
 - Of the 11 students who did not complete the play review, there were 4 students who demonstrated excellent college-level critical thinking in other assigned written work for the course, but opted not to do the play review. Were they intimidated, still, by the process, or did they just not have the time or desire?
8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

Developing this relatively simple 2-page checklist seems to have helped solve the dilemma of getting the play review done and getting it done well. These are my impressions:

- More students completing the task than in previous course offerings.
 - More students writing reviews with critical thinking outcomes in content, context, and organization skills at the college level than in previous course offerings.
 - The sheer number of play reviews in the outstanding category, i.e., writing in detail well beyond the minimum assigned length, and *taking pleasure* in discussing/evaluating/describing/sharing their personal reactions in depth was extremely impressive to me. I did something constructive here for this assignment and for the course outcomes. I think it helped too that *A Midsummer Night's Dream*, the play they studied and saw in performance, is accessible Shakespeare and the Guthrie production is so lavish and outlandishly contemporary in its treatment that students had an abundance of elements to examine/explore.
 - There were students who clearly possessed strong critical thinking and writing skills who did not need and did not submit the checklist and who nevertheless wrote outstanding play reviews, so I don't think the checklist should be required.
9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

Specifically for this course and the other theatre courses where a play review is assigned, the formatted checklist will become a permanent part of the assignment process. I may decide to drop the ½ grade upgrade incentive, but at this point, it seems to help with retention and completion rates, so why not keep it? I will show the checklist and this report to my faculty colleagues in the Theatre Department as a way of introducing an ongoing departmental discussion of critical thinking in our program and as we fashion revisions to our program outcomes language.

10. Please share any additional comments and/or suggestions for improving this process.

I highly approve of this particular semester’s caucus, the way it was designed with “assignments” to complete for each meeting based on completing certain sections of the final report as we went along, and I strongly support continuation in the future of this and other initiatives to bring faculty *across disciplines* together to find common ground in discussing/exploring universal teaching and learning strategies. The collegial nature of this process and the new connections established across disciplines is for me the highest value of the work.

	# of students given assignment	# of students completing task	Below college level		College level		Advanced level	
			#	%*	#	%*	#	%*
Results of Trial 1	41	29**	5	17%	19	66%	5	17%
Results of Trial 2 (if applicable)								

*Per cent should be based on the number of students who completed the task (third column).

** I gave 2 Incomplete Final Grades, so I am hopeful that a total of 31 students ultimately will have written and submitted a play review.

Embedded Critical Thinking Assignments Spring 2008 Report

Please complete and e-mail to KateLynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: Erica Lam

Course name and number: Intercultural Communication, SPCH 1012

Number of students: 28

Intended audience of the class (1st year, 2nd year, other): 2nd

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?

To understand how differences in culture can cause problems in communication

To learn ways to deal with intercultural differences

To enhance awareness of your own culture and its effects on your communication

2. Briefly describe **the assignment**. **What do students do during** the assignment?

Students choose a country or culture other than the one they are most familiar with and research that culture to identify its beliefs, values, and communication norms. They will then compare and contrast the culture to the one they identify with, in order to identify differences, similarities, and potential misunderstandings due to differences.

3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?

To identify and explain the communication behaviors of a culture other than your own

To categorize cultures according to intercultural theories, and analyze differences with your own culture by comparing and contrasting the two

To judge potential misunderstandings and formulate ways to communicate competently in another culture

4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)

I want students to understand the difference between summarizing and analyzing. I want them to utilize theory to determine what actions would be interculturally competent. I want them to compare and contrast two different cultures and assess the norms and values of both.

5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

College level critical thinking for this course focuses on being able to assess cultural differences for potential difficulties and misunderstandings. Also, college level students should be able to determine what actions would be interculturally competent—that is, actions that would facilitate understanding, mediation, and mutuality. In this assignment, students will focus on comparing and contrasting cultures, rather than merely describing. Also, they will be focusing on communication behaviors rather than cultural aspects such as foods and festivals.

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

This assignment is a new one, so I designed the rubric using past examples and the objectives for the assignment. I used the terms from Bloom's taxonomy to create the categories in the rubric, and the mechanics parts were taken from an earlier rubric I designed.

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?

I was very impressed when comparing the results from this assignment to a similar paper they completed at the beginning of the semester. Overall they did much better on this final paper. I think they were more aware of my expectations for this assignment. Also, they may have done better because this paper is worth 20% of their final grade, and several had me read their papers for suggestions ahead of time.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

I believe they understood what it meant for this assignment to think critically. Rather than vague terminology, the rubric helped them to see what it meant to compare and

contrast. Also, I pointed them to a sample essay that helped them understand the cultural patterns (students have a lot of difficulty with these). I will probably write a critical thinking rubric for every paper assignment now that I have seen how effective it is. I really think they understood how to compare and contrast and think creatively to solve problems. Hooray!

9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

I think this project has helped me see how some students need to have several forms of explanation before they will really understand an assignment. Some who had not done well in the past improved dramatically in this assignment. I think this is due to the specific nature of the assignment, which included a sample outline, the thorough explanation of expectations in the rubric, and the sample essay they were required to read for class discussion. I will probably use multiple routes in the future—the more chances they have, the better the outcome.

10. Please share any additional comments and/or suggestions for improving this process.

	# of students given assignment	# of students completing task	Below college level		College level		Advanced level	
			#	%*	#	%*	#	%*
Results of Trial 1	28	23	2	10%	7	30%	14	60%
Results of Trial 2 (if applicable)								

*Per cent should be based on the number of students who completed the task (third column).

Responsible Tourism Paper

In this paper, you will imagine that you are going to spend a year studying abroad in a country of your choice (any country besides the one you closely identify with). Your duty will be to examine the cultures within that country, the beliefs, values and communication norms. You should also utilize the work you have already done in your cultural background paper to assess differences between the culture you are visiting and your own. You will research this country and the cultural and communication patterns that are dominant in that culture.

Once you have completed your research, you will be ready to write your paper. The paper should identify and describe the most significant cultural values, verbal communication norms, nonverbal communication norms, and relational communication norms that you believe would influence your interpersonal communication with members of the culture you have selected. Your description should suggest both ways in which the cultural and communication patterns might lead to more competent intercultural communication and ways in which they might lead to problems and misunderstandings.

Let me emphasize that this paper is not simply a description of the cultural and communication patterns of another culture. Rather, it should focus on the juxtaposition of your own cultural and communication patterns with those of someone from another culture as you attempt to engage in competent intercultural communication. You should not describe cultural artifacts like food, handicrafts, and festivals; rather, you should examine communication behaviors and cultural beliefs and values.

Purpose:

- To help you better understand the intercultural communication theories discussed in class.
- To learn more about a culture other than your own.
- To realize where differences in culture lead to misunderstandings.
- To learn ways to become interculturally competent in another culture.

Format:

This paper should be 6-8 pages in length, typed in Times New Roman size 12 font, double-spaced, one inch margins. You should include at least three outside sources. I expect sources to be of high quality: books, newspaper articles, journal articles, magazine articles. Internet sources may be used but will only count as a half of a source—if you wish to use all internet sources, you must find six rather than three. You should proofread your paper for grammar, spelling and punctuation errors.

Due Date:

Papers are due on May 5, 2008. Late papers will not be accepted, as this is the last day of class.

The total points possible for the paper are 200. You will also give a presentation on your findings that is worth 100 points.

Possible outline for your paper:

I. Cultural Value Orientations (there are two options for this, either the Kluckhohn and Strodtbeck taxonomy or the Hofstede taxonomy, both in your class lecture notes)

Either:

- A. Activity orientation
- B. Social Relations Orientation
- C. Self-orientation
- D. World orientation
- E. Time orientation

OR:

- A. Individualism-collectivism
- B. Uncertainty avoidance
- C. Power distance
- D. Masculinity-femininity
- E. Time orientation

II. Verbal Communication Norms

- A. Turn-taking expectations
- B. Organizing and expressing ideas
- C. Amount of talking, by whom, and under what conditions
- D. Conversational topics preferred and/or avoided

III. Nonverbal communication norms

- A. Eye contact and looking behaviors
- B. Personal space use
- C. Gestures
- D. Touching
- E. Voice
- F. Time

IV. Relational Communication Norms

- A. Greeting rituals
- B. Introducing oneself and being introduced to others
- C. Self-disclosure
- D. Conversational expectations for various types of individuals (for example: older vs. younger, male vs. female, higher status vs. lower status, ingroup members vs. outgroup members).
- E. Conversational expectations when interacting with various others (for example: strangers, friends, family, co-workers)
- F. Dealing with conflict
- G. Common social episodes
- H. Persuasive style

As you can see, your paper should have four major sections, along with an introduction and conclusion. In each section, you should not only discuss the culture you have chosen, but also

compare and contrast it with your own culture. Remember, the paper should also highlight what might occur when people from the two cultures attempt to communicate.

Responsible Tourism Paper Rubric:

Category	Exemplary	Satisfactory	Unsatisfactory
Analysis	Categorizes both cultures behaviors and norms according to cultural taxonomies, verbal and nonverbal communication norms, and relational communication norms.	Categorizes only one culture or does not include one of the following: cultural taxonomies, nonverbal and verbal communication norms, and relational communication norms.	Categorizes only one culture and uses fewer than three categories
Evaluation	Compares and contrasts the two cultures with behavioral examples	Describes cultures without contrasting differences or giving examples	Describes cultures only without comparing or contrasting
Evaluation	Judges intercultural difficulties and potential for miscommunication	Gives few ideas for communication problems or incorrectly interprets difficulties	Ignores potential misunderstandings
Formulate	Creates ideas for behaviors that will lead to intercultural communication competence	Gives few ideas or gives incorrect behavioral recommendations	Ignores intercultural communication competence
Structure	Writes a clearly organized paper with a logical structure, transitions, introduction and conclusion	Writes a paper that is mostly organized, with an introduction and conclusion	Writes a paper that is disorganized, does not contain an introduction and conclusion and does not follow a logical structure
Mechanics	Uses proper grammar and spelling throughout	Sometimes uses proper spelling and grammar	Ignores rules of grammar and spelling
Citations	Cites more than three quality sources using proper format in paper and bibliography page	Cites at least three sources correctly and includes a bibliography page	Ignores citation format when citing, fails to cite sources or use bibliography page, or uses less than three sources

Embedded Critical Thinking Assignments Spring 2008 Report

Please complete and e-mail to KateLynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: *Jay Miskowiec*

Course name and number: Philosophy 1171: Ethics

Number of students: 34

Intended audience of the class (1st year, 2nd year, other): second

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment.
 - To understand the concept of ‘ethics’
 - To develop a philosophical vocabulary that relates to ethics by reading representative texts from a variety of cultures and from the ancient past to the present; to be able to integrate ideas from sources with their own understandings in order to develop a focused argument
 - To draw a connection between the study of ethics at the individual level as well as the social level (morality v. politics, e.g.)
 - To be able to apply such concepts and critical thinking to particular situations (“ethical dilemmas”); to be able to compare and contrast theories and concepts with each other in order to reach solutions or explain decision-making
 - To consider how such concepts apply to our own lives and the daily decisions we make

2. Briefly describe **the assignment. What do students do during** the assignment? The students were given an ethical dilemma, described in a paragraph. They had to make a specific, concrete choice (i.e. do A or do B, or perhaps find another way to resolve the issue). They were required to outline in detail their decision-making process, as well as explain what specific theories and concepts were utilized. They had the entire hour to produce a 250-300 word essay.

I repeatedly mentioned the assignment in class during the weeks leading up to it. Without giving them the situation, I encouraged them to review the theories and concepts we’d been discussing and to look over their midterm, where they had a similar kind of question. I think this is one of the things from my own critical thinking practices I’ve learned: it’s important to not just give assignments, but their very discussion part of the course content.

3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?
 - To put into practice critical terms and concepts from class in an appropriate way
 - To reinforce an understanding of our readings and to encourage the practice of reading texts
 - To introduce students to writing a focused essay in a limited time frame
 - To help students realize we are constantly surrounded by ethical dilemmas

I chose this particular assignment because it forces students to directly utilize the main concepts we have been discussing throughout the semester. It encourages one the rhetorical strategies I believe is most useful to students in a wide range of courses: comparison and contrast.

4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)

Students should be able to draw upon a critical vocabulary to analyze ethical situations and develop a focused argument around a specific topic. Students should be able to explain their decision making process by utilizing appropriate theories.

5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

The idea of critical thinking within the philosophy department is very close to the way it is used in this course. The competencies and use of rubrics to evaluate them seem to have consistency across instructors.

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

Having worked on the English Departments assessment the last two years, which looks has basically dealt with critical thinking in our capstone composition suite, I had helped develop along with my colleagues a couple of different rubrics. I used our latest one as a template, modifying it by considering the specific content of the ethics class and the kind of assignment the rubric was to be used with. This was the first time I used a rubric with the assignment. It didn't impact the assignment itself (I used the same situation and the same wording as in previous semesters); however, as I said earlier, it did impact the preparation for the assignment by making me especially aware of the range of ideas I wanted the students to eventually take form class, as well as underling the importance of teaching students--in all disciplines—the importance of organization and focus in essay writing and expository exams.

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?

Please find my own chart attached; I couldn't make my results fit the chart below.

What I find significant is how remarkably well most students did. With just a few exceptions, student were able to provide a focused response to the situation posed, demonstrating a good command of the theories and concepts we've been discussing.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

I'd like to try this assignment before and after the midterm exam to see how much the grasp of concepts improves over the semester. I find the assignment and the rubric a good way of checking my syllabus and course content.

9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

One thing I'd like to do in the future is keep track of what concepts are misused and the frequency of misuse. I think this assignment affords me the opportunity to see what areas I need to spend more time on and what concepts are best getting through. I think do a similar assignment at least twice during the semester will help both me and students gage the development of their critical thinking skills. And since the course content emphasizing actual action and decision-making, I think it helps for students to be able to put course readings into practice.

10. Please share any additional comments and/or suggestions for improving this process.

	# of students given assignment	# of students completing task	Below college level		College level		Advanced level	
			#	%*	#	%*	#	%*
Results of Trial 1	34	34	3	9%	19	56%	12	35%
Results of Trial 2 (if applicable)								

COMPETENCY	BELOW COLLEGE LEVEL	BASIC (1PT)	PROFICIENT (2 PTS.)	ADVANCED (3 PTS.)
<p>Compares and contrasts ethical theories relevant to the situation</p> <ul style="list-style-type: none"> • Defines accurately terms and concepts • Articulates and analyzes the difference between theories and assesses their merits and deficiencies in regard to the situation posed 	[3] 9?	<p>Student discusses at least two ethical theories. The response states important principles of each theory, but does not draw specific similarities and/or differences between them.</p> <p>[6] 18%</p>	<p>At least two ethical theories directly applicable to the situation are examined. Clear similarities and differences between them are explained. Several merits and deficiencies in applying the theories are briefly mentioned.</p> <p>[13] 38%</p>	<p>At least two ethical theories directly applicable to the situation are compared and contrasted in detail. Relevant terms and concepts are correctly defined. Several specific merits and/or deficiencies in applying the theories are explained in detail.</p> <p>[12] 35%</p>
<p>Synthesizes information from outside sources with the student's own point of view</p> <ul style="list-style-type: none"> • Draws upon multiple perspectives • Outside sources are used to support the student's own argument • The response applies knowledge to draw conclusions and is clearly formulates ideas 	[2] 6%	<p>Summarizes information from one or two class readings. A few useful keywords or concepts are used in explaining the student's argument. The response avoids faulty logic and reasoning.</p> <p>[7] 21%</p>	<p>Relevant course readings are used to support the student's answer. While utilizing outside sources, the response still has as its focus the student's own insights and ideas.</p> <p>[16] 47%</p>	<p>Key concepts are directly applied to the analysis of the ethical dilemma posed. All sources are appropriate and their use is clearly explained in relation to the student's argument. Critical questions are posed by the student and directly responded to, making use of key terms and theories.</p> <p>[9] 26%</p>
<p>Organization</p> <ul style="list-style-type: none"> • A thesis is 		<p>The writing responds to the ethical dilemma</p>	<p>The answer directly responds to the ethical</p>	<p>The answer directly responds to the ethical</p>

<p>clearly stated</p> <ul style="list-style-type: none"> • The body of the answer is directly related to the main argument and point-of-view • The answer is logically structured 	<p>[0]</p>	<p>in a general way. The response has a thesis per se, but it needs to be more focused. The argument is supported by several reasons that make use of key terms and concepts from class.</p> <p>[4] 12%</p>	<p>situation posed. The thesis is clear and focused and provides well-articulated reasons to support it; the reasons are based upon terms and concepts from class readings. The writing is coherent and has a logical development.</p> <p>[18] 53%</p>	<p>situation posed. The thesis clearly makes use of a particular ethical theory. Specific reasons are used to support the theory; the reasons synthesize both concepts from class readings with the student's own insights. The response has an essay form, with clearly articulated paragraphs and transitions that smoothly link ideas. The writing shows a clear command of grammar, punctuation and word choice.</p> <p>[12] 35%</p>
---	------------	---	--	--

SPRING 2008, PHILOSOPHY 1171 03: ETHICS (INSTRUCTOR JAY MISKOWIEC)
 ETHICAL DILEMMA IN-CLASS WRITING EXERCISE
 TOTAL POINTS: ____/9

Embedded Critical Thinking Assignments Spring 2008 Report

Instructor Name: Diane Nelson

Course name and number: GRPH 1120 Layout and Design 1

Number of students: 44 students from 2 sections

Intended audience of the class (1st year, 2nd year, other): 1st year students

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?
 - List and define the fundamental terminology of layout design.
 - Identify different factors in type choices for layouts.
 - Demonstrate the use of type and visuals in a comprehensive layout.
 - Identify the variety of typefaces available and how to identify and classify type.
 - Select appropriate typefaces based on project layout and design requirements.

I chose this course to embed critical thinking because: a.) critical thinking involving design choices is one of the course learning outcomes, b) I teach 2 sections of the course so I have a large group of students from which to gather assessment results, c.) understanding the nature of typefaces is of great importance to a designer, and finally, d.) I will be able to follow through with these students as I teach both courses in the Layout and Design sequence. I plan to continue with my assessment of them in their next course because I feel that follow through is important both in their understanding of “typeface” and it’s vocabulary and the need for retention in our program. I feel that if a student accomplishes their graphic design goals they are more prone to stay with the program.

2. Briefly describe **the assignment**. **What do students do during** the assignment?

When designing a new project for a client, one of the most important tasks of a designer is to make the words of the client come alive in the design. Our job is not to write the words but to take the written words and apply them in such a way that the reader absolutely wants and feels he/she must read them.

One of the means in which to do this is to chose the appropriate typeface design from the thousands and thousands that exist for the English language. To help the designer chose the most appropriate typeface for a job typeface designs are grouped into a number of categories based on sets of inherent characteristics of the individual letter characters. Each typeface falls into one of the set of characteristics. Thus we categorize type by its design characteristics.

It is impossible for any one person to be familiar with all of the typeface designs available but if they are aware of the characteristics in each set then it is possible to sort, choose and identify a single typeface based on what can be seen in the individual letters. The lesson plan includes instruction and activities both in a group activities and assignments where the students have the opportunity to learn the details of type, how to categorize type and why it is done.

The assessment is accomplished in two stages

- a. The students are given samplings of words that have been typed in many different typeface styles. Their job is to inspect each sampling, determine the characteristics of each sampling and determine into which category the samplings belong.

One of the many “rules” of graphic design is that designer should not use more than one typeface from a category in a single design. Different versions of a single typeface can be used but not more than one typeface from the category. If other typeface designs are needed for variety then the designer chooses from a different category.

In this first stage the students have already participated in lectures, read from textbooks, and practiced this task. The assessment contains the descriptions and an example of each category from which to choose.

- b. The second stage is similar to the first in that the students are again given samplings of words that have been typed in many different typeface styles. Again their job is to inspect each sampling, determine the characteristics of each sampling and determine into which category the sampling belong. But, this time they are not given the descriptions and an example of each category from which to choose. They must complete this activity based on their knowledge of the typefaces’ characteristics and the categories.
3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?
 - a. Learning to know typefaces, choose them, use them, sort them, and understand their characteristics is the purpose of the assignment.
 - b. Learning to make typeface choices based on sound structured reasoning rather than intuition is one of utmost importance to a designer and is one of the reasons I chose this particular assessment for embedding.
 - c. A great deal of what we teach and learn in graphic design is subjective. This has an objective outcome, which makes it very suitable for embedding.

4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)

a. After completing this assignment the students will be able to choose appropriate typefaces based on their design characteristics.

b. Students will determine into which category typefaces should be classified based in defined character styles.

c. Students will be able to sort typefaces with the ultimate goal of placing them into folders of like characteristics for cataloging in their computers.

5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

Our program does not have a formal definition of college level critical thinking so there is nothing to relate to this course. As the course instructor I have chosen "B" work to define college level.

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

This project is new to this course so there was no rubric in place. I used a rubric similar to one I use for other projects in the course. Using a rubric id not have an impact on the assignment.

<p>4 - Exceptional Beyond that which was required by specifications; Shows extraordinarily effective application of the knowledge and skills related to the performance</p>	<p>3 - Proficient Performance: ••COLLEGE LEVEL•• Completed to specifications; Shows successful application of the knowledge and skills related to the performance. Identified 70% of the terms.</p>	<p>2 - Developing Performance: Needs further development to meet all specifications at a proficient level; Shows emerging or developing (but not yet proficient) application of the knowledge and skills related to the performance</p>	<p>1 - Inadequate Performance: Shows little or no application of the knowledge and skills related to the performance</p>
--	--	--	---

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?

I found significance in the difference between classes. The daytime class out stepped

the evening class, which for me is unusual. Normally the evening class accomplishes tasks at a much higher level. I have seen this repeatedly every semester for the last 12 years of teaching both a day class and an evening class of the same course. See below for my conjecture as to the results.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

My results may have been skewed because the evening students in spring semester missed several class meetings due to the democratic process caucus' and issues within the department (my absence due to rotator cuff surgery and the death of a member of the GRPH faculty). I may not have attended to as much detail in lecture and discussions because I was out of physical and emotional energy by the time 5:30 came around on Tuesdays.

I think the results would have been worse if I had not embedded. I did add more time to this subject BECAUSE I embedded.

9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

I plan to continue this assignment in my course this Fall as it WAS an excellent opportunity to enhance the typography lessons I schedule in the course. I will add more group discussion and work to the lesson as I have found that students pay more attention to each other more often than to the instructor and if they are answerable to each other rather than me they do a better job. This next time, I plan to expand the lesson to include even more of the Sub-competencies: "Compares and contrasts facts, propositions, options, situations and sources to gauge similarities, differences, priorities, connections and relationships."

10. Please share any additional comments and/or suggestions for improving this process.

	# of students given assignment	# of students completing task	Below college level		College level		Advanced level	
			#	%*	#	%*	#	%*
Results of Trial 1	sec. 01 - 24 sec. 90 - 20 total both classes= 44	sec. 01 - 24 sec. 90 - 20 total both classes= 44	sec. 01 = 13 sec. 90 = 3 total both classes= 16	54% 15% 36.3%	sec. 01 = 6 sec. 90 = 9 total both classes= 15	25% 45% 34%	sec. 01 = 5 sec. 90 = 8 total both classes= 13	20.8% 40% 29.5%
Results of Trial 2	sec. 01 - 23 sec. 90 - 19 total both classes= 42	sec. 01 - 22 sec. 90 - 19 total both classes= 41	sec. 01 = 6 sec. 90 = 2 total both classes= 8	27% 10.5% 19.5%	sec. 01 = 8 sec. 90 = 7 total both classes= 15	36% 36.8% 36.5%	sec. 01 = 8 sec. 90 = 10 total both classes= 18	36% 52.6% 43.9%
<p>Section 01 finished with 72% assessing at college level Section 90 finished with 89.4% assessing at college level Out of 41 students completing the assessment 33 students assessed at college level or 80.4%</p>								

*Per cent should be based on the number of students who completed the task (third column).

Embedded Critical Thinking Assignments Spring 2008 Report

Please complete and e-mail to KateLynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: Cheryl L. Neudauer

Course name and number: BIOL 2225: Physiology

Number of students: 66 students completed the assessment in Spring

Intended audience of the class (1st year, 2nd year, other): sophomore

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?
 - to actively learn the terminology and concepts of physiology
 - to apply concepts of physiology to health, disease state, drug actions, and health-care professions
 - to gain experience communicating, thinking about, researching, and citing physiological concepts
 - to think critically about material in physiology and health professions

Joan Felice and I have been working together to improve student learning in Physiology, and this study would allow us to continue to develop assessments for introduction of various pedagogies. This course is a required course for the Nursing program and many other health-related degrees where critical-thinking skills are stressed. In science courses, many students are trained to memorize rather than use higher-level cognitive skills, and this results in low retention of material. I teach the subsequent course (BIOL 2226: Pathophysiology) where it is evident that students are not retaining knowledge from Physiology, and many concepts need to be re-taught.

This is a continuation and improvement of a quasi-experimental modification of a nonrandomized pretest-posttest control group design. This is part of a larger study to compare the effectiveness of a more traditional lecture approach to classroom active-learning activities. One unit of instruction was taught to one course section using case studies and problem solving, and the other section received lecture-based instruction.

In the sciences, many examination questions are multiple choice, so I wanted to design a critical thinking assessment that could be translated to other science courses. The educational literature suggests that some of the skills needed for critical thinking can be assessed with multiple-choice examinations.

2. Briefly describe **the assignment**. **What do students do during** the assignment?

Prior to the first assessment (exam 2), students were trained in these active-learning strategies; during one unit, they received lecture instruction followed by an activity involving case studies and problem solving. On exam 3, ten critical-thinking assessment (CTA) questions were embedded in the exam. Prior to the third assessment (exam 4), one section received lecture-based instruction, and the other section participated in active-learning strategies without lecture instruction (Table 1). Ten CTA questions were embedded in exam 4.

During last year's study, the active-learning methods were new and were compared to lecture based instruction which was developed over many semesters. The active methods were long, and used models and role playing, which the students found confusing. This year, the models and role playing were removed from the active methods, and students spent class time to examine brief case studies and scenarios and solve problems.

Table 1. Study Design. Section letters have been randomly assigned. Tx = treatment, which is introduction of active-learning strategies. Obs = observations, which are the embedded examination questions. The control group received instruction as in previous semesters during the second endocrine unit.

Section	Spring 2008			
A	Tx	Obs Exam3	Control (lecture)	Obs Exam4
B	Tx	Obs Exam3	Tx (active)	Obs Exam4

For each set of ten questions, there were questions to assess lower-level thinking (know, understand) or higher-level thinking (apply, analyze, evaluate). The educational literature suggests that the higher levels of these taxonomies are aligned with critical-thinking skills. The literature also suggests that the synthesis level cannot be assessed with multiple-choice questions so was excluded from this study.

In last year's project, when the questions were re-rated, some were placed into different categories than when originally designed. For example, it was sometimes difficult to determine if a question was testing understanding (lower level) or application (higher level). The questions for this year's study were written to obviously fall into lower level or higher level categories. The lower-level questions were designed to test memorization or recall of key information. The higher-level questions were designed to assess the ability to compare/contrast, analyze graphs, etc.

3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?

To recall and understand information related to kidney hormone pathways

To apply, analyze, and evaluate information related to kidney hormone pathways

This assessment, embedded in their exams, will provide a baseline measurement (exam 3) to see if the control and treatment groups are similar and will allow measurement of how well they can answer lower-order thinking (recall and understand) and higher-order thinking questions (apply, analyze, and evaluate). It will also measure whether students perform better on lower-order and higher-order questions with lecture-based instruction or active learning.

4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)

After instruction, students should be able to: (1) recall and understand the kidney hormone pathways and (2) apply, analyze, and evaluate information related to the kidney hormone pathways

5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

Compares and contrasts facts, propositions, options, situations and sources to gauge similarities, differences, priorities, connections and relationships.

Gathers, synthesizes and integrates input from diverse sources to plan an experiment, produce an oral presentation or written report, create a product or propose hypotheses.

Applies a variety of rational, creative, technical approaches to question assumptions or practices or complete a task.

Applies knowledge, concepts, information, experience, theories and techniques to draw conclusions, arrive at solutions, or select a course of action.

The higher-order thinking questions on the exam assess students' abilities to compare and contrast facts and situations and apply knowledge, concepts and information to arrive at solutions. Students also need to analyze data when interpreting graphs.

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

Rather than use a rubric, multiple-choice exam questions were written. These are similar to questions used on other parts of the exams this semester and in the past. Systematically writing and rating questions has been a great exercise and has improved my writing of other exam questions.

For lower-level questions, at least 90% (9-10 correct) was considered advanced, 80% (8 correct) was considered college level, and less than 80% was below college level (0-7 correct). For higher-level questions, at least 80% (8-10 correct) was considered advanced, 70% (7 correct) was considered college level, and less than 70% was below college level (0-6 correct). Percentages were calculated by dividing the number of students at each level by the total number of students completing all assessments.

7. After completing the chart below, discuss your **data**. What is significant about these numbers?

More than two thirds of students were below college level on higher-order thinking skills (less than 70% correct), and this was an increase from last-year's assessment (77% vs. 52%). There was also an increase in students below college level for lower-order thinking questions this year compared to last year (45% vs. 23%). There were also decreases in students rated at college level: 23% vs. 42% for lower-order questions and 6% vs. 26% for higher-order questions. This year, a higher percentage of students were classified as advanced on lower-order questions (42% vs. 35%), but the percent classified as advanced for higher-order questions declined (17% vs. 22%). In summary, student performance declined with the exception of students rated as advanced on lower-order thinking questions.

When comparing lecture-based instruction to active learning, students declined in their average overall ability to answer the CTA questions on exam 4 vs. exam 3, and there was a larger decline for students who learned the material with active strategies (compare Figure 1 and 2). The same was true for lower-order questions. For higher-order questions, the average number of correct responses increased slightly with lecture-based instruction and declined for active learning.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

Participating in these assessment projects provides the incentive to systematically design assessments and analyze the data. It has prompted me to be more systematic in writing exam questions, thinking about pedagogy, and emphasizing and incorporating practice of critical thinking skills in the classroom, on assignments, and in assessments.

It is concerning that there was a large increase in students ranking below college level. There are many possible reasons for this. This year's assessment also involved a much smaller sample (66 vs. 197). The majority of the exam questions were re-written. Since the lower-level questions were designed to test primarily recall, and this is the lowest level of learning, those questions may have been easier and may explain the increase in the percentage of students in the advanced category. Their prior educational experiences may also have influenced this (e.g., if their prior classes emphasized memorization). The higher-level questions were designed to test analysis skills whereas last year's questions primarily tested application and analysis. Since analysis is a higher level skill than application, this may have produced a more difficult exam. It will be interesting to repeat this assessment in the next year.

I have a subjective observation that students entering the class are less well prepared each semester with respect to background knowledge, study skills, and ability to use critical thinking skills. In future semesters, I could tract this by adding a pre-test administered on the first day of

class. As a department, we could also work with the prerequisite courses to ensure that these skills are developed.

During last year's assessment project, there was no difference in students' abilities to answer lower- and higher-order questions whether they learned the material using lecture-based instruction or active learning. This year, there was a decline in performance with active learning compared to lecture-based instruction. Since last year's active methods were too long, and the models were confusing, the active methods were shortened this year, and the models were removed.

9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

In next year's study, a combination of models, problem solving, and lecture-based instruction will be compared to lecture-based instruction in a continued effort to find the most effective strategy to learn this difficult material. There will also be increased efforts throughout the class to emphasize critical thinking skills. Data are also being collected in the subsequent class (Biol 2226: Pathophysiology) to see if these pedagogies affect retention of material into future semesters.

10. Please share any additional comments and/or suggestions for improving this process.

	# of students given assignment	# of students completing task	Below college level		College level		Advanced level	
			#	%*	#	%*	#	%*
Results of lower-order questions	72	66	23	45%	15	23%	28	42%
Results of higher-order questions	72	66	51	77%	4	6%	11	17%

*Per cent should be based on the number of students who completed the task (third column).

Figure 1: Baseline data to determine if the two sections were similar prior to changing instruction

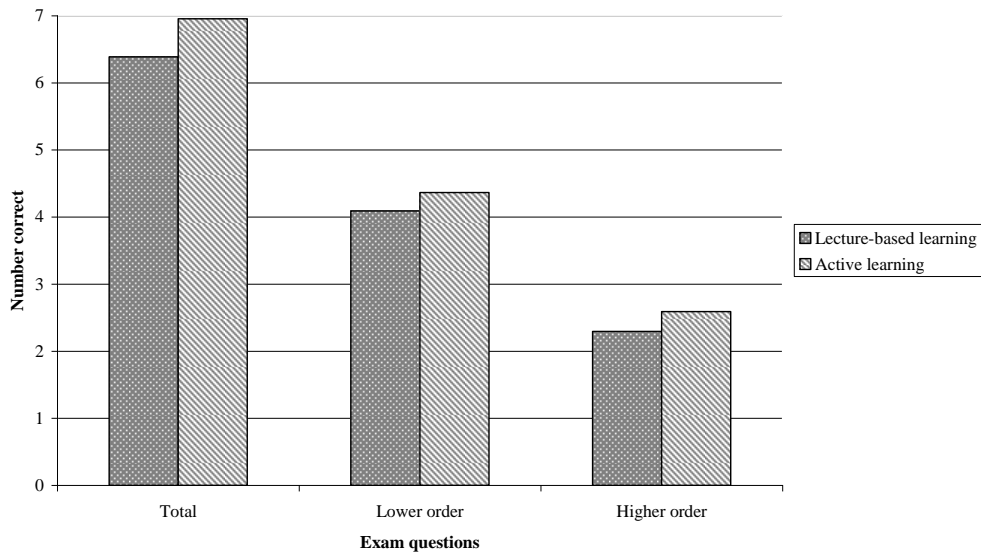
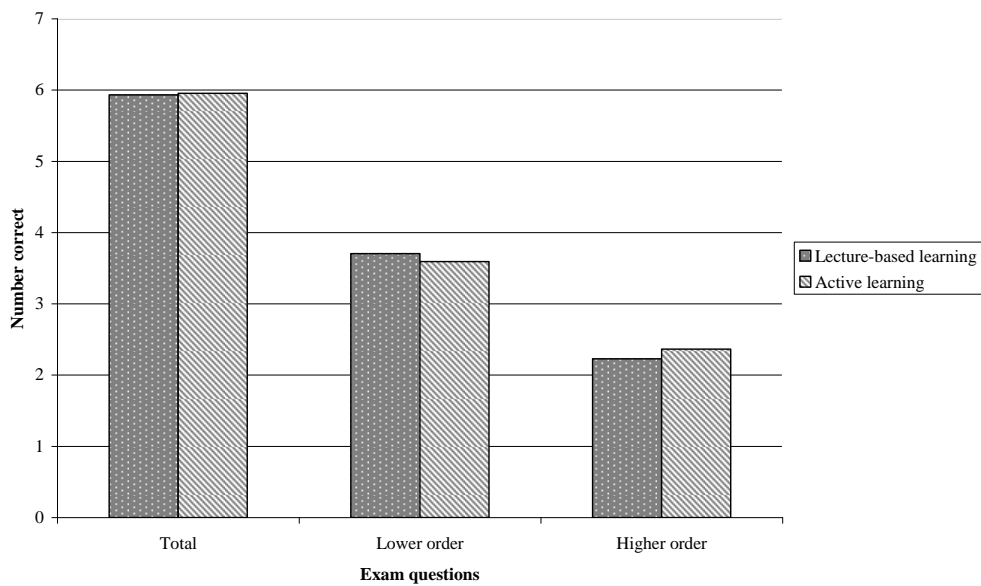


Figure 2: Data after changing the type of instruction



Embedded Critical Thinking Assignments Spring 2008 Report

Please complete and e-mail to KateLynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: _____ *Elizabeth Pauly* _____

Course name and number: _____ *MUSC 1000 – Introduction to Music* _____

Number of students: _____ *27* _____

Intended audience of the class (1st year, 2nd year, other): _____ *1st year* _____

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?

The main course objectives are:

- Develop skills in listening to music actively and intelligently.
- Develop awareness of repertoires and musical styles representing a variety of cultures and regions of the world.
- Identify differing sounds associated with different types of music, i.e. instrumentation, texture, timbre, etc.
- Grow in an understanding of musical context, that is, the historical background and the social, political, and economic environment of a society that influences the creation and performance of music.
- Demonstrate these new abilities in writing and speaking (assignments and class participation).

These more narrowly focused objectives can be summarized in two statements:

Students will actively listen to music and describe what they hear in musical terms both verbally and in writing;

Students will articulate, both verbally and in writing the similarities and differences between musical examples in a variety of styles;

For me, having both sets are important – the more detailed objectives help me form the skeleton of the course, and give students a fairly clear picture of what they will be learning. I use the summary statements for myself – they are, in a sense, the guiding principals for how I structure the course, and I constantly return to them if I feel that I am including information that strays too far from them. Survey courses can easily get weighted down in minutia, and I have found it helpful to have these statements in mind as I create and evaluate course content.

I chose this course in particular because I believe it lends itself to critical thinking. Last year I designed a series of assignments that would engage students in active or "critical" listening. It was (and continues to be) my experience that many of the students taking this course were used to voicing their opinion as to their likes and dislikes regarding a variety of musical styles, but they spoke with no context – they had no tools to talk about music intelligently and their musical experiences were limited to a small variety of music. In addition, I was not at all convinced that students were listening to musical examples from the textbook outside of class. With these thoughts in mind, and after really looking at my objectives, embedding a critical thinking project was not only a natural fit, it was crucial, in my opinion, to achieving the desired outcomes.

After having a first attempt at this series of assignments, I am using this year to help refine things – clarify, tighten, etc.

2. Briefly describe **the assignment**. **What do students do during** the assignment?

The assignment I developed was a "Listening for Differences" Chart. About once per week students were given a chart they were to fill out, comparing two different pieces of music on a variety of musical elements. Music was selected from the class materials, and was frequently, though not always, music we had listened to and discussed during class. An instruction sheet was posted on D2L to help guide students in the process. (This was a change from the previous year, in which instructions were printed on each assignment. In addition, students were specifically directed to use the rubric designed for the assignment to help them improve the quality of their work.)

3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?

- The purpose of the assignment is two-fold: First, it gives students a practical application for the skills they are building within the class; Second, it gives students an actual purpose for listening to the recordings that come with their textbook outside of class. As exposure to music outside of their comfort zone is a crucial element, this is very valuable.
- Active listening, and the ability to describe both verbally and in writing what they have heard are the core elements in the class. This assignment covers both elements, and at the same time requires students to make a case for their responses. It seems a natural fit for critical thinking.

4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)

- Students will be able to determine through active listening the musical elements in a musical selection: melody, harmony, rhythm, timbre, texture, form, and genre or style.
 - Students will be able to describe in writing the musical elements they hear, as well as any changes in those musical elements that occur over time.
 - Students will be able to determine and describe in writing the differences between the musical selections they are listening to.
5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

Critical Thinking in Music – What we want our students to be able to do across the discipline:

Perceive and critically respond to music with insight grounded in knowledge, sensitivity, and a discerning ear.

Communicate those experiences, perceptions and responses not only through spoken and written means, but also through language and activities uniquely intrinsic to music, including its creation and performance.

Evaluate musical performances, both as an observer and as a performer.

The first two outcomes can be measured in an assignment such as the one that is being measured in this embedding.

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

Designing the rubric was one of the more challenging pieces of the project, but ultimately the most necessary and useful. My first version of the rubric used the descriptors "at college-level" and "below college-level", but I scrapped it before I even graded the first round of charts. I found that what I had crafted was too vague. I very much believe that a rubric should actually help students complete an assignment, and give students tools to edit their work before submitting it for a grade. The original rubric did not do that.

My second version was significantly different, based on the "excellent", "very good", "needs improvement", and "poor" model. This did not have anything to do with rejecting the "college level" format. This change came about because I found examples of other rubrics I had examined and liked that were designed specifically around critical thinking.

Criteria for evaluating the charts were distributed across 4 basic categories: **content** (subdivided into three areas as follows: 1) "demonstrates understanding of readings and time spent in class", 2) "ideas, descriptions and details express deeper thinking or original thoughts;" and 3) "writing incorporates detail:"), 4) **expressing yourself musically**, 5) **terms** and 6) **accuracy**. Point values were assigned to each category. While the assignment in general was designed to elicit critical thinking, the two areas that I examined for the scope of this research, were 1) and 2) under "content".

The major challenge in developing this rubric came down to actually codifying what I wanted the projects to end up looking like. I actually had to complete several of these assignments myself before I really wrapped my brain around what I was looking for. Once I did that, I had a much clearer picture of what I hoped my students would produce and was able to come up with descriptors. In this way, the act of designing the rubric actually impacted the design of the assignment. In future years I would like to survey the students to compare the work of those who consistently used the rubric for guidance with those who did not. I can guess by looking at the work, but it would be a guess, and not based on actual data.

This year, I modified the rubric further, clarifying some language in the descriptors and refining the categories, which are now: Understanding of Content; Deeper thinking/insights; use of detail; clarity; terms and accuracy.

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?

First of all, here is what was examined: The first assignment that was done outside of the classroom setting (LD 2), LD 4 and LD 10 (the final assignment). The area that was evaluated corresponds with the rubric: "Deeper thinking/insights".

There are many ways that this data could be analyzed. However, I see two strong patterns, which reflect my experience of the past semester. First, the number of students actually completing the assignments drops off continually through the semester, so that by the 10th assignment (which was the last one), only 10 out of 27 students turned in a completed assignment. Second, the percentage of quality work goes up continually throughout the semester.

It would be easy to look at this and be happy with the numbers – after all, the number of "excellents" increase from 41% to 80%. But this would ignore the disturbing trend of fewer and fewer students turning in assignments as the semester goes on. I think that the number of "excellents" increase precisely because those students who did poorly on earlier assignments eventually gave up, leaving a pool of students heavily weighted toward those who are comfortable with the project.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did

your experience with embedding in this assignment affect subsequent critical thinking assignments?

From my observations, in conjunction with study of the data, my opinion is that those students who had trouble with this assignment from the beginning never sought help to improve their work, but instead gave up. Those students who did well to begin with continued to do well, and the richness of their work improved from assignment to assignment. The very act of participating in this type of active listening on a nearly weekly basis was a powerful learning tool for those students who kept up.

I try to evaluate and critique my teaching throughout the semester. I look at the entire course at the end of each semester. Working on this assignment as an embedded project has pushed me further than I might have. Last year doing this process led me to crafting my core objectives for the class. This year, after teaching the course in the fall, I have spent the spring entirely revamping my course materials to better reflect my core objectives.

9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

I have several ideas that I plan to implement to improve this assignment for future semesters.

- I plan to do the first few assignments in small groups during class time in future semesters. Students will have the opportunity to work together, bounce ideas off of each other and present their descriptions for feedback during class time. I believe this practice will give students more confidence to do this on their own when the time comes, and will give students a better understanding of how to complete these charts.
- The rubric still needs improvement. While I understand my descriptors at this point, I would like the rubric to be more student-friendly.
- Musical selections for these assignments will be made with a more sequential vision of learning in mind.
- I need to examine the way that I give feedback. I used "comments" in Word documents, and saved the docs in pdf format so that I was certain that students could read the comments. I could see from specific improvements in student work that many students responded well to these comments. However, the process was incredibly labor-intensive. In addition, it may have turned off some of the students who were having trouble with the assignments.
- Instead of delivering the project directions via D2L, I may actually print it out, distribute it, and go over it with students during class. In addition, I will direct students to it as we do some of these assignments during class.

10. Please share any additional comments and/or suggestions for improving this process.

I love the Google Groups. Meetings are nearly impossible for me to get to, and I have sincerely missed the interaction with colleagues that is so crucial to this process. I think the use of groups has real potential for those of us who can't regularly attend.

	# of students given assignment	# of students completing task	Below college level (Poor to Good)		College level (Very Good)		Advanced level (Excellent)	
			#	%*	#	%*	#	%*
Results of Trial 1 (LD 2)	27	27	9	33%	7	26%	11	41%
Results of Trial 2 (LD 4)	27	20	4	20%	5	25%	11	55%
Results of Trial 3 (LD 10)	27	10	0	0%	2	20%	8	80%

*Percent should be based on the number of students who completed the task (third column).

Sample rubric and sample assignment are on the following pages.

Listening for Differences Rubric

Points	4	3	2	1
	Excellent	Very Good	Needs Improvement	Poor
1. Understanding of Content	Writing demonstrates clear understanding of similarities and differences in identifying musical characteristics	Writing usually demonstrates clear understanding of similarities and differences in identifying musical characteristics	Writing seldom demonstrates clear understanding of similarities and differences in identifying musical characteristics	Writing demonstrates little or no clear understanding of similarities and differences in identifying musical characteristics
2. Deeper thinking/ insights	Often applies concepts in new contexts; Frequently makes connections beyond what has been specifically stated or taught	Occasionally applies concepts in new contexts; Sometimes makes connections beyond what has been specifically stated or taught	Seldom applies concepts in new contexts; Seldom makes connections beyond what has been specifically stated or taught	Does not apply concepts in new contexts; Does not make connections beyond what has been specifically stated or taught
3. Use of detail	Writing is rich in detail and conveys more than enough information to back up assertions.	Writing usually incorporates detail, and conveys enough information to back up assertions.	Writing includes few details and seldom or never conveys enough information to back up assertions.	Writing includes no details.
4. Clarity	Responses are very clear – meaning is easy to grasp.	Responses are mostly clear – meaning is easy to grasp..	Responses are frequently unclear – meaning is difficult to discern.	More than half of the responses are unclear in meaning.
5. Terms	Music terminology is used appropriately and accurately.	Music terminology is mostly used appropriately and accurately.	Music terminology is seldom used or use of terminology has many errors.	Music terminology is not used or used inappropriately and/or incorrectly.
6. Accuracy	Information is accurate.	Information is usually accurate.	Information contains many inaccuracies.	Information is inaccurate more than half of the time.
<p>These points will be added to total assignment grade if done:</p> <ul style="list-style-type: none"> 1 pt - assignment is typed in 12 pt. Font 1 pt – listening guide is included, instructions are followed <p>1 point will be deducted for every missing element (a box not filled in).</p>		<p>Final assignment grade will be converted into percentage points. 5 percentage points will be deducted per day for each day an assignment is late.</p>		

Listening for Differences #2: Sherburne (Guide No. 6) and The Promised Land (Guide No. 7)

Name: _____

	Sherburne	The Promised Land
Type/Genre/Style		
Purpose		
Melody		
Harmony		
Rhythm (pulse and tempo)		
Timbre (instruments and/or voices used and their tone quality)		
Texture		
Structure or Form		
Defining characteristics		

1. Understanding	2. Insights	3. Use of detail	1 pt - typed in 12 pt. Font 1 pt – listening guide is included, instructions are followed 1 point deducted for each missing element (a box that is not filled in).
4. Clarity	5. Terms	6. Accuracy	Total points

Embedded Critical Thinking Assignments Spring 2008 Report

Please complete and e-mail to KateLynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: *Melissa Castino Reid*

Course name and number: **Both English 1110 and 1111**

Number of students: **Between 25-27**

Intended audience of the class (1st year, 2nd year, other): **1st and 2nd**

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?

Here is the English department's course description for 1110: "This course gives students instruction and practice in writing essays for a variety of purposes and audiences. You will receive instruction and help in developing ideas, thinking critically, organizing your writing, and revising and editing sentences. By approaching writing as a process involving prewriting, drafting, peer response, revising and editing, you will be able to write more clearly, fully, and gracefully."

Melissa's comment: for this assessment project, I'm tackling three objectives in the course description. The first one is critical thinking. The second objective is obvious: writing. Then, since writing is a process, the third objective is the revising and editing step.

It is my sincere hope that students learn and do a few things. First, I want students to engage in the peer review process in a real and vital way. In the past, my students have simply "gone through the motions" rather than seeing peer review sessions in a serious light. Second, the synthesis of feedback, writing about that feedback, and considering your next steps as a writer based on that feedback is a good exercise in verbal literacy. Here's what it means: the combination of "writing, reading, speaking, and listening and the ability to use language to learn and participate in the discourse and decision-making of academic, personal, professional and public life" (University of Arkansas at Little Rock). Central to this activity is indeed critical thinking.

I chose both my 1110 and 1111 sections simply because we have peer review sessions when students bring in their rough drafts. I'm not sure if I will get results that are vastly different or very different, but I teach both classes, and I thought it would be good to investigate both.

2. Briefly describe **the assignment**. What do students do during the assignment?

My main purpose is to strengthen my peer review component in my writing classes by designing what I call a “peer synthesis essay.” Here is the process directly from the handout I give my students:

- Exchange essays, names, and briefly introduce each other. Take notes as to who your peers are.
- As writers, share what you are struggling with on your drafts. Ask clarifying questions so that your peers can help you. For example, I might ask my writing group members a question like, “Where do I need more detail?” or “What do you see as my central theme, and does it work?”
- Read the draft. Mark on the draft as you go. Use positive reinforcement when possible – hail the emoticons ☺ - and use constructive criticism that helps the writer grow rather than stunt their growth. (I would suggest... vs. this section really sucks. *See a difference?*)
- Take out a sheet of paper. Write REVIEWER at the top, and place your name next to it. Start the letter, “Dear _____.” Place the writer’s name in the blank. You’ll write a note to the writer using any or all of the phrases on the back of this sheet. The letter doesn’t have to be more than a page, but it should be no less than half of a page.
- In your letter, try to offer three kinds of feedback: 1) **praise**, 2) **areas of confusion or questions**, and 3) **suggestions for the next draft**. Refer to the writer’s questions to you as well.
- If time allows, discuss the points you make in the letter verbally. Make sure the writer comprehends what you write/say about their essay.
- Give the letter and essay to the writer.
- At the end of the session, you should have reviews of your essay back from your peers. Friendly advice: put everything in your manila folder and read the peer reviews 24 hours later. This timely break will (I hope) give you some perspective on the reviews as well as your draft.
- When you are ready, read the reviews. Take notes of what they say. Then type up the following document that I am calling “peer synthesis and my next steps.”
- In this document, I’d like to see the following elements, and in this order:
- The name(s) of the peers and a very brief bio of them.
- A snapshot of any or all of your peers' feedback, using quotes from their letter to you. Try to include a little something from each section: 1) **praise**, 2) **areas of confusion or questions**, and 3) **suggestions for the next draft**.

- End on what you agree with, what you disagree with, and what you think you will do on your next draft. **(I'll write an example and post it on D2L within the week.)**
- Finally, grade your reviewer, using the following rating:
- 3 – Very useful feedback, clear, concise, honest but not harmful
- 2 – OK feedback, some decent thoughts, but average.
- 1 – Not very useful, empty of clarity, examples, perhaps a negative take on my writing rather than helpful.
- Print this up and include this in your manila folder when you submit your final draft.

Note: I will NOT grade this peer synthesis on your grammar or punctuation. I am more interested in the following essentials: how the practice of peer reviewing goes, your critical thinking process and how that affects your next steps with the draft, and what grade you assign your peers. [Melissa's note: I will know the student has engaged in the critical thinking process by supplying the assessment rubric before they complete the activity. I will also take some time discussing it, asking students to freewrite on it briefly, or perhaps I could start a discussion thread on D2L.]

3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?

As I said earlier, it is my sincere hope that students learn and do a few things. First, I want students to engage in the peer review process in a real and vital way. In the past, my students have simply “gone through the motions” rather than seeing peer review sessions in a serious light. Second, the synthesis of feedback, writing about that feedback, and considering your next steps as a writer based on that feedback is a good exercise in verbal literacy. Finally, learning how to work effectively in small groups, especially in this culturally diverse population, is a valuable tool for MCTC students as they transform into global citizens.

4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)
 - **In their peer synthesis, students should be able to give a clear snapshot of their peers' feedback given to them on their drafts. This would include a summary of main ideas as well as quotations from the letters they received from their peers. In the summary, I asked the students to include praise, confusion/questions, and suggestions for their next draft.**
 - **Then, with the peer letters in hand, the student must decide on and write out their thought process on the peers' feedback. Students must**

state clearly what they agree and disagree with. My hope is to see an “aha” moment or even a confirmation of something they suspect about their own writing.

- **Finally, they must also write out their next steps based on this feedback. I want to see either conscious goals made derived from their peers or defense and support for their writing choices.**

5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

It has come to my attention that our department doesn't have a definition for **college level critical thinking** as it relates to either 1110 or 1111. Clearly, as I wrap up this assessment project, this is something that our department ought to consider, change, and implement in the near future.

6. How did you design the **rubric** for your embedded assignment?

With the help of the Internet as well as KateLynn Hibbard and Haven Stephens, I carefully looked at other finished products. I am designed my own – very basic - model based on that research. For now, it strikes me wise to use very basic language like “below average, average, and above average.”

Had you used a rubric for this assignment prior to the embedding project? **NO.** If so, how did you change your original rubric? **N/A**

How did you determine the descriptors for college level critical thinking in this rubric?

Once again, I browsed the Internet and borrowed from models in use.

Did using a rubric have an impact on the assignment? **For now, the assignment came first, and it was literally born at the time of signing on to the assessment project. But I don't think this is necessarily bad. In fact, I see this assessment project as a means of forcing me to pick apart the assignment that I created, actually critically think about sum of the parts as well as the whole.**

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?

With the first round of numbers, what's telling is the number of students who fell below college level – eight students out of 14. And only a handful – five out of 14 – met the college level. One student out of 14 scored above college level.

The implications of the numbers show that the activity of peer review is viewed in one of the following ways: boring, scary as you respond to another peer's draft, or it could depend on the cohesiveness of the group students find themselves in.

- **If this activity is indeed boring, how do I make it less so?**
- **If this activity is scary, how do I make it less frightful?**
- **If this depends on the student group dynamic, how do I assess that and make necessary changes?**

For the second round of numbers from my 1111 class, 70 percent were at college level compared to 57 percent in the 1110 class. Yet no one displayed the above college level characteristics.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

I chose to simply assign the activity without letting the students know that I was “embedding and assessing.” I felt as though the students might be “more themselves” and less apt to provide flowery feedback just to look good.

9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?
 - **Point value is the first change that I make to “peer review.” If I think this is valuable to the students, then I have to show that by attaching a point value to it. And I’m considering two ways to do this: first, students should get a point/grade on how well they complete the peer synthesis document. Secondly, I’m considering how to attach a numerical score to the “grade” the reviewers give each other. So if student X receives an average of 2s all throughout the semester, what point value do I place on that, and how do I keep track of that?**
 - **The second change really needed this trial run to start with. I will now use the best peer reviews as examples, post these onto D2L, and use the comment function on Word as I highlight what is good about those examples. Perhaps I will get some class evaluations that discuss the value of the peer synthesis. If there is a quote that argues strongly for the use of peer review/synthesis, I will use that quote as a “selling point” to the value of the activity.**
 - **Perhaps another thing I could do is provide a more in-depth example from my own personal writing group. I do provide an example of the actual peer synthesis document, but this time I should show a piece of my writing before I meet with my group, and then that same piece of writing REVISED as per the peer review session as well as peer synthesis.**
 - **Another thing I will do is provide a “blank” peer synthesis document that does provide the six headers under which I would like the students to compose: Brief bio of peers, summary w/ quotations, written thought**

process, rates feedback with reasons, states whether they agree or disagree, and here are my next steps.

- Finally, I will ask the students to not only provide synthesis on their peers' responses but also MY feedback on their essays. Perhaps that will force the students to see this as valuable and not boring.

10. Please share any additional comments and/or suggestions for improving this process.

- Showing Craig Hergert's PowerPoint Presentation, perhaps a shortened version, would go a long way in helping us define and reflect on Critical Thinking.
- In conjunction with this, ask instructors to write these thoughts down here in this report, citing examples of Critical Thinking from their personal and professional lives.
- Assemble a set of reading material at the library for instructors to check out and read.
- Place a complete set of definitions, completed projects, and discussion links onto D2L. Ask future participants to log in and respond to others at least once. Dump the Yahoo discussion.

	# of students given assignment	# of students completing task	Below college level		College level		Advanced level	
			#	%*	#	%*	#	%*
Results of Trial 1 (1110)	22	14	8	57.14	5	35.71	1	7.1
Results of Trial 2 (1111)	18	10	3	30	7	70	0	0

*Per cent should be based on the number of students who completed the task (third column).

Melissa Castino Reid

Assessment project 2008

Rubric for assessment of critical thinking.

Scoring grid: 1 – Below level 2 – College level 3 – Advanced level

1. Student gives a brief bio of each member in his or her peer group. Student could be fundamental, by simply *completing the task* or creative *ala engage in artistic expression* in their creation of the bios.

2. Student gives an accurate summary of main ideas with the possible use of quotations from the letters they received from their peers. The student displays critical thinking by *gathering, synthesizing and integrating input from diverse sources (meaning other students in class)* to produce written report.
3. Student writes out their thought process on the peers' feedback. Here the student will *apply* their own *knowledge* and writing *experience to draw conclusions* on peers' feedback.
4. Student rates the feedback of each reviewer with reasons for that evaluation.
5. Students must state clearly what they agree and disagree with. Now the student shall *gather, synthesize, and integrates input from diverse sources to formulate and support a position*.
6. Student writes out their next steps for their draft based on their peers' feedback. *Finally, the student shall apply knowledge, information, and experience, to select a course of action.*

Task	1 – Below level	2 – College level	3 – Advanced level
Student gives a brief bio of each member in his or her peer group. Student could be fundamental, by simply completing the task or creative ala engage in artistic expression in their creation of the bios.	<ul style="list-style-type: none"> • Student skips over this step. • Student barely names the peers in his/her group. 	<ul style="list-style-type: none"> • Student names each peer, spelling the names correctly. • Student provides the peers’ biography, naming their home town or country, major and/or perhaps favorite hobbies. 	<ul style="list-style-type: none"> • Student provides bios, homelands, and hobbies using fun and engaging language. • Student indicates a common bond with his/her fellow peers.
<u>Student gives an accurate summary</u> of main ideas with the possible use of <u>quotations</u> from the letters they received from their peers. The student displays critical thinking by gathering, synthesizing and integrating input from diverse sources (meaning other students in class) to produce written report.	<ul style="list-style-type: none"> • Student simply <i>doesn’t use any quotations</i> from peers’ letters. • Student writes a sentence at best summarizing his/her peers’ feedback. • Student only quotes peers but doesn’t wrap their own thoughts around these quotes. (Hence, a dropped quote.) 	<ul style="list-style-type: none"> • Student provides at least one quote from each peer. • Student summarizes each peer’s letter, highlighting <i>at least one piece</i> of praise, suggestion, or confusion. • Student names each peer accurately and attributes quotes accordingly. 	<ul style="list-style-type: none"> • Student provides more than one quote from each student. • Student summarizes each peer’s letter, highlighting <i>more than one piece</i> of praise, suggestion, or confusion from each peer.
Student <u>writes out their thought process</u> on the peers’ feedback. Here the student will apply their own knowledge and writing experience to draw conclusions on peers’ feedback.	<ul style="list-style-type: none"> • Student dismisses this step completely. • At best, student writes one sentence that acknowledges his/her peers’ feedback. • Student may use a negative tone of voice. 	<ul style="list-style-type: none"> • Student uses sentence starters such as, “I like how John says…” Or, “when Mary said my conclusion was weak, I thought…” • Student uses a curious and engaged tone of voice. • Student connects old writing experiences with this new one. 	<ul style="list-style-type: none"> • Student uses same sentence starters as mentioned in the college level column. • Student displays curiosity and enthusiasm as s/he connects old writing experiences with new ones.
Student <u>rates the feedback</u> of each reviewer <u>with reasons</u> for that evaluation.	<ul style="list-style-type: none"> • Student fails to rate peers. • Student rates peers without reasons for that evaluation. • Student provides reasons for a scoreless 	<ul style="list-style-type: none"> • Student names peer, assigns a rating to that name. • Student outlines clearly why peer received the rating s/he did. • Student uses 	<ul style="list-style-type: none"> • Student uses language named in the college level column. • Perhaps student uses a quote from the letter to support the rating.

	evaluation.	sentences such as “I’m giving John a 2 for the following reasons: …”	<ul style="list-style-type: none"> • Student uses respectful language, keeping in mind potential language barriers, cultural differences, and educational levels/background.
Students <u>must state clearly what they agree and disagree with</u> . Now the student shall gather, synthesize, and integrate input from diverse sources to formulate and support a position.	<ul style="list-style-type: none"> • Students don’t state clearly how they agree or disagree with their peers. • Student dismisses this step completely. 	<ul style="list-style-type: none"> • Student names peers individually and carefully what statements they agree/disagree with. 	<ul style="list-style-type: none"> • At this point, the student has laid the foundation for the last part of the assignment, and an above college level student will be cognizant of this by using phrases that transition beautifully to the final piece: the writer’s next steps with the drafting process.
<u>Student writes out their next steps for their draft based on their peers’ feedback</u> . Here, the student shall apply knowledge, information, and experience to select a course of action.	<ul style="list-style-type: none"> • Student dismisses this step completely. • Student uses short, clipped phrases that signify that they simply want to get this “task work” done. 	<ul style="list-style-type: none"> • Student outlines at least one or two of his/her next steps for the subsequent draft based on their peers’ feedback letters. • Student demonstrates critical thinking assessing these next steps even before taking them. 	<ul style="list-style-type: none"> • Student outlines three or more next steps for the drafting process, based on the peers’ feedback letters. • As the student finishes the assignment, s/he notes the value of sharing and responding to each other’s work in the “peer synthesis” document.

**Embedded Critical Thinking Assignments
Spring 2008 Report**

Please complete and e-mail to KateLynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: _____Perry
Ruedy_____

Course name and number: _____CARP 1700, Residential Construction #3_____

Number of students: _____15_____

Intended audience of the class (1st year, 2nd year, other): _____1st_____

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?

- a. Framing
- b. Roofing
- c. Siding installation
- d. Fascia installation
- e. Soffet installation

2. Briefly describe **the assignment**. **What do students do during** the assignment?

Build an 8X8 framed structure

3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?

- Accuracy of measurement
- Safety
- Proper fastening/fasteners
- Follow directions/plan exactly
- Level

4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)

Behavior-evidence

Level within 1/16" of an inch

- d) Framing structure on all 4 corners
- e) Horizontal Siding level
- f) Vertical corners plumb
- g) Repeat of shingles not more often than every 3 rows
- h) No leaks of the roof
- i) Soffet and fascia at college level

5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

Critical Level Thinking: I might say the ability to use prior knowledge and problems solving skills to do critical thinking is used through out.

It directly relates

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

No, but indirectly

Clarity and more difficult to attain a 10 (at college level)

Always maintain certain levels of expectations or performs at college level

Yes, they inter related throughout

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?

None of my students are advanced

Approximately 1/2 are @ college level and 1/2 are below

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

I'm getting what assessment is

Reflecting and improving

Affects every aspect of my teaching

9. What could you do to improve student learning for future assignments?
 (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

- a. Use rubrics 2 ways
 - i. Grading
 - ii. To know whether I did a good job
 - iii. I need to do this to be the best I can be and CARP

10. Please share any additional comments and/or suggestions for improving this process.

	# of students given assignment	# of students completing task	Below college level		College level		Advanced level	
			#	%*	#	%*	#	%*
Results of Trial 1	15	15	7	47	8	53	0	0
Results of Trial 2 (if applicable)								

*Per cent should be based on the number of students who completed the task (third column).

**Embedded Critical Thinking Assignments
Spring 2008 Report**

Please complete and e-mail to KateLynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: *Greg Skudlarek*

Course name and number: **HVAC 2350 Commercial Ice Machines**

Number of students: **15**

Intended audience of the class (1st year, 2nd year, other): **2nd**.

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?
 - **Interpreting electrical diagrams for commercial ice machines**
 - **Interpret operating sequences for commercial ice machines**
 - **Troubleshoot and repair commercial ice machines**
2. Briefly describe **the assignment**. **What do students do during** the assignment?

Students will interpret electrical diagrams for commercial ice machines used in the HVAC lab for the purpose of troubleshooting different fault scenarios. Instructor will then install similar faults into the ice machines and then students will troubleshoot machines while being monitored by instructor.

3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?

To measure success of students ability to diagnose and troubleshoot ice machine faults using only an electrical diagram and understanding the operating sequence of the ice machine.

To compare the student's success to diagnose and troubleshoot working on the actual ice machines versus just using the electrical diagram.

4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)

Students will learn how to diagnose and troubleshoot commercial ice machines using an electrical diagram for the machine. This will be measured by a written exam as well as a hand-on lab assessment test.

5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

Critical thinking is defined by our division as the ability to use background knowledge about a particular piece of HVACR equipment and successfully diagnose a problem and repair the equipment. This definition is directly related to the assignment.

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

I averaged the scores of the written and lab exam for each student and used that

number as their overall score for the assignment. The results were then entered into the rubric.

I had not used a rubric for this assignment in the past.

I based the descriptors on the grading procedures for our department. In order to

pass our courses they must score a total of 70% or higher, we do not assign D grades.

I do not feel the rubric had an impact on this assignment.

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?

The data results showed that the majority of the class averaged scores of 80% to 89%. These are results I was hoping for given the time spent on this project.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

The subjective results show that most students in this course had an easier time with the critical thinking applied to troubleshooting this equipment when they could work on it hands – on versus troubleshooting by the schematic only. Although two students scored above 90% on the written exam and above 90% on the lab exam. These are the results I would prefer since I believe they should be effective at troubleshooting both ways. The two students also excel in all other courses in our department. This method of critical thinking is not new for our courses since we do similar embedding in all repair courses.

9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

I would probably spend more time troubleshooting schematics with the class and include troubleshooting questions about schematic diagrams on future mid-term and final exams.

10. Please share any additional comments and/or suggestions for improving this process.

	# of students given assignment	# of students completing task	Below college level		College level		Advanced level	
			#	%*	#	%*	#	%*
Results of Trial 1	14	14	0	0	12	86	2	14
Results of Trial 2 (if applicable)								

*Per cent should be based on the number of students who completed the task (third column).

Scores are an average of written and lab exams.

Below College level – 0 to 69%

College level – 70 – 89%

Advanced – 90 – 100%

Written exam		Lab exam	Average
1	75%	95%	85
2	75%	84%	80
3	65%	94%	80
4	75%	91%	83
5	70%	93%	82
6	80%	94%	87
7	85%	91%	88
8	83%	80%	82
9	68%	89%	79
10	63%	94%	79
11	90%	99%	95
12	90%	97%	94
13	85%	92%	89
14	75%	90%	83

**Embedded Critical Thinking Assignments
Spring 2008 Report**

Please complete and e-mail to KateLynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: _____*Yolanda Y.
Williams*_____

Course name and number: __Introduction to World Music_MUSC 1060-
01_____

Number of students: _____34_____

Intended audience of the class (1st year, 2nd year, other): __All students

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?
 - a. Be able to define specific relationships between musical elements like instrumentation, scale patterns and performance techniques to cultural elements like: religious beliefs, stories of origin, economy, lifestyle, rules regarding social hierarchies, etc.
 - b. Relate these findings to the ways in which the music they listen is created, preserved and enjoyed also within a cultural context.
 1. It is important for students to understand music from a cultural context.
 2. Understanding their own music within a cultural context removes music from the status of being about merely entertainment and helps them to understand it as cultural expression.
 - c. To be able to “see” these relationships students have to be able to:
 1. Identify music elements
 2. Learn and appropriately use music vocabulary

3. To some small degree perform simplistic versions of the music

2. Briefly describe **the assignment**. **What do students do during** the assignment?

There were several assignments leading up to the final project.

- a) The first was a written paper.
 - Students choose a song or genre that identified them as part of a culture. This paper was written after a lecture and in-class discussion of the definition of the word, *culture*.
- b) The second assignment was small group discussion
 - In this discussion students were given follow-up questions based on a case study from our textbook. They were asked to examine the changes in music and the performance of that music that occurred when ancestral ways of living are destroyed by encroaching westernization and urbanization.
- c) The third group of assignments included the learning of children's songs and rhythms specific to individual cultures. I first taught the class the music by rote, then handed out the sheet music for the same songs. During the debrief students were asked about the rote learning process. *It was interesting, though not surprising that the students who had studied music found this way of learning difficult and "inefficient," but the students who had no recent music instruction preferred this to having to look at any forms of notation or lyrics.
- d) In the final project, students were asked to create a virtual radio program. This radio program was to be a documentary based on a topic of their choice.
 - Students created a proposal that had to be approved before beginning the project.
 - The first sheet of the project was just a "playlist" of the music, its times, the performers' names, etc.
 - The sheets that followed included "radio patter" that expressed a student's knowledge of the subject and their research.

- Some students, for extra credit, made recordings of their radio programs, though no students had to actually own the music they used in the program.

3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?

The reason I choose a series of projects leading up to the final project was to ensure the success of the final project. By the time students were working on the radio program they had studied many different cultures and their expressions through music. They had related these *foreign* experiences to their own. They had played some of the instruments they were studying in the educational techniques that were common to the culture. They had been in a small sense of the word immersed in an understanding of music as cultural expression.

In the final project, I wanted students to show that they could given the large bulk of available music, choose pieces of music and artists who were representative of their understanding of their topic. Some topics included:

- a) (A ethnography of) China through traditional folk songs
- b) Multiple expressions of Gamelan
- c) Drumming techniques around the world
- d) Lullabies around the world

The final project represented the culmination of their learning and the degree to which they understood the relationships between music and culture.

I choose this project because:

- a) It was an active expression of musical choice
- b) It was a “fun” way to present research on a topic
- c) It gave me a sense of the changes happening within students’ understanding of the interrelatedness of music and culture
- d) It gave me a way to assess:
 - Understanding and use of musical terms

- Analysis and choice of music
 - Changes in the valuing of music as “good” or “bad”
4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)
- Students are be able to analyze music based on its musical elements (rhythm, tempo, instrumentation, melodic contour, lyrics)
 - Students are able to see those music elements as cultural expression and to identify differences in culture based on difference in choice of music elements
 - Students are able to see that the music of U.S. “sounds” the way it does because of the cultures that create, preserve and are consumers of it. It represents the history and ethnography of our nation in the same way the music of other countries does.
 - Students are able to communicate their analysis
5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

Elements of the Music Dept.’s definition of college level critical thinking include:

- Identify music using appropriate terminology
- The ability to analyze music using appropriate terminology and techniques
- Create music within identified parameters
- Understand be able to discuss musical form and form an appreciation for various musical styles, genres and expressions
- Value music beyond that of mere entertainment, but as cultural expression

My assignments are well within these elements.

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

I designed a rubric based on the following the students use of choice.

- Choosing songs through research and analysis that presented their research topic.
7. After completing the chart below, discuss your **data results**. What is significant about these numbers?
 - I am not surprised by the results. Students at MCTC know quite a bit about music and have, I would consider, quite advanced and eclectic musical tastes. My task was to mainly to provide them with new language and to help them to see that the decisions they were already making about music being relevant to them as a cultural participant was comparable to those in countries and with practices perhaps *foreign* to their backgrounds and experiences.
 - The students who completed the assignment at a level below the rest of the class were students who had difficulty engaging in the class and its materials all along. Their attendance was poor and though they tended to respond and engage when absolutely necessary, did not put forth enough of a consistent effort to complete this portion or any other portion of the course successfully.
 - The two students who went beyond the parameters of the assignment were quite frankly, inspired. They took the assignments as a way to know their own culture from a different perspective. One student for example from China, had no appreciation of her culture's traditional music until in she her own words "heard them explained in my class." Another student from Liberia, choose a culture in Liberia with which she was not familiar, to expand her understanding of the differences within her country.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?
- Whenever I have presented this assignment in the past, I was more interested in giving students a creative outlet for the expression of their knowledge. Re-thinking this assignment as one of assessing and teaching critical thinking impacted how much time I spent on teaching critical thinking skills and often I supported this final project with other assignments.
 - While I typically infuse my courses with critical thinking elements, I tend to do this as a matter of habit, rather than by intentionally identifying the elements of critical thinking beforehand and identifying ways in which I can afterward assess my success in helping students to build critical thinking skills.
9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?
- I am certain that taking a more holistic approach to teaching is coming closer into my skills. What I mean by this is seeing the entire course as an interlocked web of teaching, reinforcing, assessing and re-teaching skills, concepts and ideas. Though I am not “sold” on the rubrics idea, because I am afraid that both teachers and students will teach or produce *to the rubric* rather than to the actual concepts. I can see a rubric’s value in determining specific skills that can be learned and then assessed; and in creating purposeful learning.
 - I will improve on my teaching, because, first of all that’s the type of teacher I am. I will use what I have learned from this project because it has shown me some tangible and purposeful ways to see and to communicate what I have sensed.
 - I thank you for the opportunity.
10. Please share any additional comments and/or suggestions for improving this process.

	# of students given assignment	# of students completing task	Below college level		College level		Advanced level	
			#	%*	#	%*	#	%*

Results of Trial 1	30 students	29 students	2	6.89%	25	86.2%	2	6.89%
Results of Trial 2 (if applicable)								

*Per cent should be based on the number of students who completed the task (third column).

Embedded Critical Thinking Assignments Spring 2008 Report

Please complete and e-mail to KateLynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: _____Cory Woosley_____

Course name and number: _____ADEV 1100 Strategy for Success_____

Number of students: _____15_____

Intended audience of the class (1st year, 2nd year, other): _____1st year_____

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?

The student will be able to:

- * Demonstrate the use of MCTC technology (D2L, email & efolio)
- * Model critical thinking by providing a well thought out Efolio that includes the expectations laid out in the rubric.
- * Apply goal setting strategies to GPS LifePlan areas
- * Examine career pathways
- * Develop a five year life plan

Strategies for Success is often the first course that students take in college. Many of the students are taking the course because of identified learning needs or situations that have determined they need a class that can help them to succeed. Students can be more successful if they receive clear and concise directions to assignments. We can also insure more successful students by clearly laying out what the components of an assignment are. This is done with tools such as the rubrics. By starting out a college career with assignments that have clearly defined parameters we are assisting our students to be successful. ADEV's Strategies for Success is a good place to start.

2. Briefly describe **the assignment**. **What do students do during** the assignment?

Why use Efolio's?

Many colleges are using ePortfolio to aid students in career planning, individual planning and goal setting and job placement. With good support and instruction from the college the student will learn to assemble and manage personal records, creating a dynamic

virtual identity. They can reflect and comment on their work, and reflect on their growth as they progress, giving it a dynamic journal quality. It is totally controlled by the student, who can come to see the ePortfolio as an enhanced resume, a set of credentials that can grow and stay with them over

Efolio Assignment

The Minnesota State Colleges and Universities offers the new E-portfolio program, which allows any individual to create, develop and manage a personalized Web site with no prior programming knowledge or experience. Students can use their E-portfolios to develop and show their résumé, academic achievements, work samples, transcripts, video and other documents. Faculty can use the new tool to share information with students, show their academic credentials, list their published work and share teaching tools with others.

See Attached Assignment Description

3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?
 - * To develop a fluid E-Portfolio to support and guide career searches
 - * To embed the pieces of the GPS lifeplan into the E-Portfolio
 - * To utilize the different tools of the Efolio MN site
 - * To present an E-Portfolio that is free of spelling and grammar errors as well as appealing to potential users

The E-Portfolio assignment has many important components that make it a good choice for embedding. First it is potentially something that colleges will be looking at as a tool for career planning. Providing continuity in the expectations will help not only students but advisors and faculty have a clear picture of what constitutes a quality Efolio. Second, there are many components to the assignment, the rubric will provide clarity to student expectations and assist instructors in looking at the components of the Efolio.

4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)

Students will gain knowledge on the importance of having a professional E-Portfolio and how it can assist them in career planning. Putting their personal information in the E-

Portfolio will assist them in organizing their career and academic information. Through the EFolioMn website they will utilize one form of a technology based E-Portfolio.

Learner Outcomes/Objectives

1. To develop a fluid E-Portfolio to support and guide career searches
2. To embed the pieces of the GPS lifeplan into the E-Portfolio
3. To utilize the different tools of the Efolio MN site
4. To present an E-Portfolio that is free of spelling and grammar errors as well as appealing to potential users

5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

The ADEV department defines critical thinking as the ability to reflect on situations and topics and move forward with a plan. In this department our focus is in providing success skills for students in college. They need to be able to look at how the relationships they have affect their ability to succeed. The learning that happens in this course needs to be applied to their everyday college life, so they are asked to draw upon their skills come up with plans and then act upon that. Examples of this are in the Efolio and in the five year plan where they must take pieces of information they have learned and put it together for a plan that helps them in college and in career planning

In the Strategies for Success Course critical thinking is embedded in many of the discussions and assignments. For example as we reflect on learning styles, we look at several different mechanisms for understanding the students own style to be successful. Students need to thoroughly examine their own actions and behaviors to evaluate how they can support THEMSELVES as a college student. Throughout the course students must reflect on why the choices they make can affect how successful they are. When completing assignments or presentations students need to critically analyze information to problem solve success strategies. In addition, they need to gather and synthesizes information to examine how resources can help them succeed on college. Critical thinking that happens in this course involves students critically evaluating their own actions and how that affects their success.

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college

level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

The rubric that I will be utilizing has been designed based on the objectives for the assignment that student will find in their syllabus and posted in their D2L classroom. Each area of the rubric is based on a goal for the assignment. Previously there has not been a rubric for the Efolio assignment. The motivation for designing the rubric is to provide more direction to the students as well as other ADEV instructors.

The rubric aids students in viewing the expectations of the assignment in terms of moving through higher levels of understanding and thinking. A student who is receiving “fours” on their work is recognizing that to complete the assignment effectively they will need to develop more complex ways of thinking about themselves and their career planning. The rubric clearly lays out what a successful Efolio project should include; these components were based on resources available on the EfolioMN site, and viewing samples of other EFolios. They will need to recognize that allowing sufficient time and practice to complete the Efolio is necessary in developing a quality project. Students that don’t have the needed higher level of thinking will proceed with the assignment by doing the minimal work.

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?

First, I had a very small group complete the course, so the data may not be overly convincing. However, having completed this assignment with two other classes last semester, the final product (the completed Efolio’s) were significantly better than the previous projects.

To me, having a rubric that laid out the assignment expectations as well as pushing them to critically evaluate their projects and the material in them.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

The impact was tremendous, as I mentioned above the difference between last semester and this semester was huge. Students understood WHY they were doing what they were doing. Having the rubric upfront, helped the students to identify how the components of the course (career inventory, learning styles, financial literacy, five yr plan) all fit into this Efolio.

To me, having a rubric that laid out the assignment expectations as well as pushing them to critically evaluate their projects and the material in them.

The effects on critical thinking were that students needed to think about how all of the pieces in the course come together as a whole. They had to identify the topics in the course that will help them to succeed in pursuing their career. They also had to gather all of this info together and put it into a final project in a way that will help them and make sense to future employees.

9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

My number one hope is that MCTC begins utilizing more components of the GPS lifeplan. There was a bit of a flaw in the project as I wanted students to focus on the lifeplan areas for their Efolios. There isn't a clear cut place for the students to find this information in our campus. They were able to use Century College's site but it still would have been nice to have them more familiar with the system. That was a flaw in my preparation as by including the Lifeplan as a major part of the Efolio, there wasn't the needed familiarity with it. In the future I will use the conversation starters on the century website as an additional handout and lecture.

http://www.century.edu/lifeplan/files/GPS_LifePlan_Conversation_Handout_draft_2.pdf

I also envision adding a portfolio assignment to the course that helps students gather and identify information that can go into a lifeplan.

10. Please share any additional comments and/or suggestions for improving this process.

FABULOUS EXPERIENCE, I am extremely glad that I participated in this, Id recommend it to all adjuncts, it was a great way to get involved and understand some of the work that the college is doing!!

	# of students given assignment	# of students completing task	Below college level		College level		Advanced level	
			#	%*	#	%*	#	%*
Results of Trial 1	7	7	0	0	4	57%	3	43%

*Per cent should be based on the number of students who completed the task (third column).

Efolio Assignment

The Minnesota State Colleges and Universities offers the new E-portfolio program, which allows any individual to create, develop and manage a personalized Web site with no prior programming knowledge or experience. Students can use their E-portfolios to develop and show their résumé, academic achievements, work samples, transcripts, video and other documents. Faculty can use the new tool to share information with students, show their academic credentials, list their published work and share teaching tools with others.

To start your Efolio go to www.efoliominnesota.com/ You will need to register to start an account, once you do this you will receive an email that provides you with the link for your personal Efolio. Make sure to bring this to class on the days that we work on our Efolio and for your presentation!

See attached rubric for grading Criteria

Learner Outcomes/Objectives

5. To develop a fluid E-Portfolio to support and guide career searches
6. To embed the pieces of the GPS lifeplan into the E-Portfolio
7. To utilize the different tools of the Efolio MN site
8. To present an E-Portfolio that is free of spelling and grammar errors as well as appealing to potential users

Explanation

Students will develop an E-Portfolio using the EfolioMN website for professional use in college and career planning.

Students will:

1. Include personal goals or accomplishments from each of the 7 GPS Lifeplan areas(see below)
2. Include professional student contact information
3. Develop a visually aesthetic E- Portfolio
4. Be able to navigate the components of the EFolioMN system
5. Present their completed E-Portfolio to the class on the assigned due date

GPS Lifepan Areas:

Learning Plan

- * Discover your learning style
- * Connect to various academic support services on campus
- * Improve your study skills
- * Enhance your computer literacy

Education Plan

- * Select the appropriate program/courses
- * Choose the credit load that is right for you
- * Track your academic progress
- * Develop a transfer plan or set other educational goals

Career Plan

- * Identify the career program or degree major that fits your skills and interests
- * Learn how to make decisions and set goals to pursue your major or career

Personal Plan

- * Learn about relationship-building and communication styles
- * Consider your 'family life' goals
- * Set a plan for your health and fitness
- * Create a plan for managing stress
- * Deepen your awareness of your personal values and identity

Leadership Plan

- * Develop leadership skills
- * Participate in campus and community activities and organizations
- * Make social connections
- * Build experiences for your resume

Finance Plan

- * Cover all of your various college expenses
- * Develop a personal budget
- * Set lifelong financial goals
- * Consider future lifestyle goals as part of your career-decision making process

Work Plan

- * Make a successful transition from MCTC
- * Build effective resumes and cover letters
- * Improve your interviewing skills
- * Gain job seeking skills
- * Develop an on-line portfolio
- * Consider options for part-time employment, internships and service learning

Teacher Name: **Cory Woosley**

Student Name

CATEGORY	Exceeds College Level Thinking	Meets College Level Thinking	Below College Level Thinking
Includes GPS LifePlan	All of the seven areas of the GPS lifeplan are included and clearly defined	Most of the seven areas of the GPS lifeplan are included and clearly defined	The seven areas of the GPS Lifeplan are not included or clearly defined
Spelling and Grammar	There are no errors in spelling, punctuation or grammar in the final draft of the Web site.	There are few errors in spelling, punctuation or grammar in the final draft of the Web site.	There are many errors in spelling, punctuation or grammar in the final draft of the Web site.
Interest of Efolio	The student has made an exceptional attempt to make the content of this Web site interesting to the people for whom it is intended.	The student has tried to make the content of this Web site interesting to the people for whom it is intended.	The student has provided only the minimum amount of information and has not transformed the information to make it more interesting to the audience
Utilizes the components of the Efolio website	The student has exceptional knowledge of the material included in the site and where to find additional information. Can easily answer questions about the content and procedures used to make the web site.	The student has a good knowledge of the material included in the site. Can easily answer questions about the content and procedures used to make the web site.	Student did not appear to learn much from this project. Cannot answer most questions about the content and the procedures used to make the web site.

Embedded Critical Thinking Assignments Spring 2008 Report

Please complete and e-mail to KateLynn Hibbard by MAY 9, 2008. Stipends can not be released until all reports are completed.

Instructor Name: *Carissa Wyant*

Course name and number: _____ PHIL 1171-92, Philosophy of Ethics

Number of students: _____ 38 _____

Intended audience of the class (1st year, 2nd year, other): _____ 1st & 2nd year _____

Please complete this report using Word. Use as much space as you need to answer the questions below, and return your report by attaching it to an e-mail.

1. List three to five major **objectives for the course** in which you have embedded your assignment. (What is the purpose? What do you want students to learn?) Why did you choose this particular course for embedding a critical thinking assessment?

Be able to identify ethical theories, understand ethical terminology and be able to explain various normative ethical theories. Also students should be enabled to apply the theories they learn to a wide range of issues and "real-life" dilemmas in areas such as in business, law, medicine, education, economics, sexual relations, politics, or any fields of concern to the students personally and professionally.

Critical thinking is an essential tool for student to develop in this course - it is the essence of what I want to teach students to do.

2. Briefly describe **the assignment**. **What do students do during** the assignment?

They will be researching an ethical problem or issue, and writing a paper exploring the issue, considering how it is viewed from various angles.

3. List three to five major **objectives for your embedded assignment**. (What is the purpose of the assignment? **What do students learn?**) Why did you choose this particular assignment for embedding?

1. Students are able to analyze a problem or ethical issue from various view points.
2. Students are able to detect and refute biases while researching the problem or issue.
3. Students are able to synthesize their findings, and formulate an argument.

4. What are the **student learning outcomes** for your embedded assignment? (What should students be able to do **after** completing the assignment? **Outcomes must be observable and measurable.**)

The outcomes are described in the rubric I have developed. At the highest level, students will be able to analyze and ethical issue, researching it to find various perspectives. The student will then critique the content of their research, with close attention to detecting biases. The student will then write a paper arguing from a particular perspective, but paying attention to exploring divergent ideas on the subject.

5. How does your division/program/discipline define **college level critical thinking** as it relates to this course? How does that definition relate to this assignment?

MCTC's official college policy discusses critical thinking as follows:

"Courses assigned to all MnTC goal areas are designed to help students develop as thinkers who are able to unify factual, creative, rational, and value-sensitive modes of thought. Critical thinking will be taught and used throughout the general education curriculum in order to develop students' awareness of their own thinking and problem-solving procedures. To integrate new skills into their customary ways of thinking, students must be actively engaged in practicing thinking skills and applying them to open-ended problems. Most courses teach one or more of the critical-thinking student competency areas."

Students will be developing critical thinking through the examination of an ethical issue or problem. They will need to formulate an argument, and offer supporting evidence for their claim. In doing so, they will be weighing various perspectives on the issue, in order to craft a paper.

6. How did you design the **rubric** for your embedded assignment? Had you used a rubric for this assignment prior to the embedding project? If so, how did you change your original rubric? How did you determine the descriptors for college level critical thinking in this rubric? Did using a rubric have an impact on the assignment?

I designed the rubric with four levels of student achievement, including: Accomplished, Competent, Developing and Beginning. The rubric is meant as a tool to measure students in three areas as they work to complete the assignment: interpretation, analysis & evaluation and presentation. The rubric details what each level would look like in a student's performance.

I researched various definitions of critical thinking, and the MCTC model as well. I developed a rubric based on these definitions, and how they might be achieved through the assignment I was planning.

Yes, I think it made it more clear for students. They were given a copy of the rubric, and we talked about it in class. It also made it more clear for me as an instructor, in providing feedback to students, and also in the evaluation process.

Yes, i have previously used a public speaking rubric when I participated in a public speaking embedded assignment group. That rubric was very different (in terms of content) however, the levels were the same.

7. After completing the chart below, discuss your **data results**. What is significant about these numbers?

Most students (about 80 percent) completed the assignment at college level. A few (about 10 percent) completed it at an advance level, while about 10 percent completed it below college level.

8. Aside from statistics, what are the **subjective results**? What impact, if any, did embedding have on the assignment? On the course? For example, in what ways did your experience with embedding in this assignment affect subsequent critical thinking assignments?

Students had a more clear idea of what I was looking for in assignments, and also were able to clearly identify the various levels of what they would need to demonstrate in order to get a better grade.

9. What could you do to improve student learning for future assignments? (Examples might include changes to lectures, readings, handouts, activities, assignments, rubrics, or other impacts on your teaching processes.) Why would you make these changes?

I would give out a copy of the rubric early in the semester, and have a discussion about it, and how it pertains to assignments. What the rubric asks students to do is what i hope they will be doing throughout the semester, building on their critical thinking skills as we examine various ethical philosophies and issues the course looks at.

10. Please share any additional comments and/or suggestions for improving this process.

	# of students given assignment	# of students completing task	Below college level		College level		Advanced level	
			#	%*	#	%*	#	%*
Results of	33	33	5	15.1	24	72.8	4	12.1

Trial 1								
Results of Trial 2 (if applicable)								

*Per cent should be based on the number of students who completed the task (third column).

Carissa Wyant
 Minneapolis Community and Technical College
 Critical Thinking Rubric
 Spring 2008, Philosophy of Ethics

Scoring Level

	Interpretation	Analysis & Evaluation	Presentation
<i>Accomplished-</i>	Analyzes questions Refutes biases Critiques content Examines inconsistencies	Examines conclusions Uses reasonable judgement Discriminates rationally Synthesizes data	Argues succinctly Discusses issues well Justifies decisions Justifies decisions
<i>Competent-</i>	Asks insightful questions Detects biases Categorizes content Identifies inconsistencies	Formulates conclusions Recognizes arguments Notices differences Evaluates data	Argues clearly Identifies issues Attributes sources Suggests solutions
<i>Developing-</i>	Identifies some question Notes some bias Recognizes basic content States some inconsistencies	Identifies some conclusions Sees some arguments Identifies differences Paraphrases data	Has arguments Generalizes issues Cites sources Presents few options
<i>Beginning-</i>	Fails to question data Ignores bias Misses major content Detects no inconsistencies	Fails to draw conclusions Sees no argument Overlooks difference Repeats data	Omits argument Misrepresents issues Excludes data Draws faulty conclusions

Faculty Survey of Critical Thinking Practices at MCTC, May 2008
Kate Lynn Hibbard, Interim Assessment Co-Coordinator

This survey was given at Faculty Development Days in May 2008 as part of a Faculty Excellence Award Project. After completing the written survey, respondents were divided into two groups and had peer-facilitated conversations about their responses. Below is a compilation of the 27 written responses, with brief observations following each question.

1. What division or program do you teach in regularly?

- ACES (World Religions)
- Apparel Technologies, 2
- Biology
- Cinema Division
- English, 9
- English/Humanities
- ESOL
- Math, 2
- Philosophy
- Psychology, 2
- Reading and ADEV
- Social Science
- Sociology
- Sound Arts and Cinema
- Theatre arts, Speech Communication
- Welding & Metal Fabrication

Of the 27 respondents, English and Humanities faculty numbered 12, or nearly half the sample. Career and technical faculty numbered 5.

2. Think of a particular course you teach, and indicate which of the sub-competencies of critical thinking you teach regularly in that course. Check all that apply.

- a) Sub-competency A (compares and contrasts to gauge relationships)
11 + 12
- b) Sub-competency B (gathers, synthesizes input)
9 + 12
- c) Sub-competency C (assesses multiple perspectives to articulate understanding)
9 + 12
- d) Sub-competency D (applies a variety of approaches to question assumptions)
6 + 12
- e) Sub-competency E (applies knowledge to draw conclusions)
10 + 12

f) I do not teach critical thinking skills regularly in my courses

0

(Checked all 5: 12) – Numbers don't add up to sample size

No faculty indicated they do not teach critical thinking skills regularly. Nearly half the sample indicated that for the specific course they were describing, they used all five subcompetencies of critical thinking.

3. Choose ONE of the sub-competencies you marked in #2, and give a brief, specific example of an assignment you use to help students gain these skills.

a) Personality Theory (chapter of General Psych). Students work in groups to identify which theory is being described by either a psychoanalyst, humanist, behaviorist, or Trait theorist. The group must indicate which type of theorist is giving the statement.

a) Reading journal: must compare two texts or two related pieces in one section of the journal

a) Evaluating web sites – internet source reliability/validity. Students are required to do 2 internet searches on a topic using the same search terms but 2 different search engines – a general one like Google and a specialized or academic engine like Academic Index. Then they have to compare results viz. credibility, bias, sponsorship, currency, etc.

b) Students are required to see a play performance and write a formatted, 1000 word play review which articulates their personal response, describes what they saw, and draws conclusions/makes recommendations for a hypothetical reader who has not seen the play.

b) I have my students pair up in groups of two and do a research project on our class readings. They must tell or show the class something new about the reading that we didn't discuss and show us how it relates to our communities.

b) Final research paper. They have to compare and contrast sources on paper.

b) In product development class the student gathers information from various sources that include trend, marketing, and shopping retail. From this research a product line is developed. The focus of the product line is to satisfy a specific target market.

b) The student is given step-by-step directions in analyzing a photo, sketch, or actual garment. The student is given instruction on pattern making and construction of the garment. They then must synthesize the info and create their version of the photo, sketch or garment.

b) After reading an article the class discusses what the author was saying. Follow with writing on a question that requires the comparison and contrasting of information related to the article.

c) Personality assignment

c) Students watch a video-taped segment of "60 Minutes" on a controversial issue. They take notes on the main arguments of each side, then summarize the segment in their own words & give their opinion supported with facts from the video.

c) I use a small group then large group discussion of the question, "Are viruses alive?" to facilitate both critical thinking and what constitutes valid evidence/arguments for a

position and to solidify understanding of the nature of viruses. Students are later asked to give and back up a position, and back up the opposite argument.

c) Short paper examining how different ethical theories produce different responses to a moral question

c) Ethical dilemma

c) Compare and contrast a ritual in 2 different religions (e.g. for prayer), done after basic concepts and practices are studied

c) A question on the final exam: I gave the students a NY Times article on CEO pay during the mortgage crisis and asked them to use principles of justice and equality to analyze what if anything should be done. Is it morally right for CEOs to bring in that pay in light of the crisis? Students then used principles & responded. For those who answered no, I asked for recommendations for Congress.

c) Students first read 2-3 essays/ stories on a certain topic, then write reading log summaries of each, then draft short essays that integrate their own experience with one of the readings, and finally revise drafts into larger essays that explore their own and a published author's understandings of a certain issue

d) When analyzing a statistical study we discuss "sources of uncertainty," which may impact the interpretation of the conclusion and our ability to make inferences based on it.

d) Questions on logarithms can be approached and solved in several ways. The answers obtained often look very different from each other even though they are equal.

d) mini-assignment is given where students read a short excerpt from "Racism in the English Language" and then answer questions related to the power of everyday language.

d) Business analysis: question a company's marketing – define and use common words; explore how a company presents themselves and why they make those choices – products, pricing, image

d) Present a particular situation to students; invite them to analyze it, apply different approaches to it, create a story illustrating the different perspectives that relate to the issue, express artistically the many points of view possible, the assumptions and practices, present a final vision through a script

e) Students choose two careers and then find homes they can buy with salaries from those two careers

e) D1.1 Structural steel welder qualification test

(a-e) I begin all of my writing assignments with an engaged, questioning discussion of readings that are themselves critical (i.e., questioning) in nature. We start with critical reading, move on to developing ideas and then use writing to articulate and explore assumptions, biases, blind spots, etc.

(a-e) Post-Katrina unit. Students read articles, listen to news reports, watch Frontline & When The Levee Broke, have online and in-class discussions, then produce a formal analytical paper taking a stand on the whole Katrina/Post-Katrina situation, using at least 3 sources. They revise and edit many times.

* no assignment given

Observation: there is a lot of overlap in the subcompetencies. Faculty giving similar kinds of assignments often identify them as teaching different skills. This points to the difficulty in assessing such a broadly defined competency.

4. How do you know if a student has gained the skill you identified in #3? In other words, how do you evaluate the student's performance of those skills? What kind of data, if any, do you collect about your students' critical thinking performance?

- Hard to know general critical thinking ability prior to class, especially if student is quiet. Written assignment on personality, use rubric – majority of points they can earn center on ability to link concepts & clearly exemplify them with examples from own life
- Students' oral summaries are recorded. The instructor scores their summaries on a rubric in grammar, pronunciation, and content. The content component indicates their competency in identifying key facts, distinguishing relevant details, and offering logical support to justify their opinions.
- The assignment is reviewed in class. Students have the opportunity to ask further questions about the correct answers. There isn't much data collected on this assignment except for the participation grade of completing the assignment.
- The test is visually inspected and destructively tested to code requirements of D1.1
- Written paper, 2-4 pages; specifically look to see that they have addressed key questions and identified a company's "objective" place in a market (beyond their own marketing)
- Script analysis. The script and the different stages of script development are my way of evaluating the students' performance. His/her capacity to adjust their stories to what happens during our regular analytic meetings is another tool to determine their performance.
- First of all, they have to complete and submit the play review. Second, they must follow the sequenced format of 5 sections. Third, within each section, they must complete a checklist of content elements to assure they have mastered the required elements for the review. This semester I am collecting data on CT skills via a rubric.
- Evaluation is of written responses, both soon after and later (in exams) the discussion. I have not thought to collect any more than the basic scores on these assessments.
- They write a paper to a specific audience: e.g., blended families, medical students, single moms. The paper provides advice to the audience about choosing a career and/or buying a home
- Students write at least 3 drafts of each paper and we work on these skills on each draft. My comments are phrased as questions designed to encourage exploration and I compare results as new drafts come in
- In the presentations, the students must come up with class questions and I evaluate CT from how informed they are on their topic and how in depth the discussion gets from the question

- Awareness of different approaches (objective: present or absent); finesse with which they can apply different approaches (subjective: qualitative distinction); ability to evaluate different approaches (rational criteria applied? coherent judgment reached?)
- I assess the quality of their discussions, as well as the quality of their drafts (in terms of thesis statement, support, organization, etc.) This is my data.
- Using a rubric; designing assignments to test this
- rubric, discussion, short answer questions. Do I think they “got it.”
- Students write or discuss about the comparison. Discussion done in small groups is reported to a large group. On paper, students respond to a worksheet question.
- It shows up in the writing. If the student is weaving sources into a coherent whole, then it has worked. The student should be evaluating the sources.
- I look for students’ explanation of connection, look for their understanding of themes; I use a rubric & give full points for strong connections
- After completing the research a report is completed. From that report the product line begins to develop. The student is evaluated on cohesiveness of the product line and how it satisfies their target market.
- Using a rubric, the students’ work is graded on the number of correct components and quality of pattern and/or garment. Did they understand the significance of each element in order for the garment to be made?
- By asking them to show that the various (apparently different and unequal) answers are actually exactly equal
- In their essay, I want to see 1) a clear definition of the principles used; 2) complexity and detail in their application; 3) different answers/responses from different theories; and 4) assumptions noted throughout. I use a CT rubric for all of these.
- Grading of writing. Encouraging discussion as class.
- I have not yet created rubrics in this course, but will do so to let the students know what kinds of things I am looking for. I look for clarity, proper use of terminology, and, of course, answers which indicate understanding
- I assess all 3 pieces of writing giving feedback at each stage, where I model and comment on their ability to assess and understand diverse perspectives on the topic. Other than recording grades for each assignment, I record no additional data on their critical thinking performance.
- Students perform written evaluation on comparison of the sources, addressing whether the search result they’ve selected from each engine would or would not be an appropriate source of information to use in a research writing process.
- Most of my evaluations are subjective – do I think, based on class activities and discussions, that students got it?

Observations: There is an equation of grading with assessment in a number of cases. A number of faculty report making subjective evaluations vs. systematically assessing learning a skill. There is a wide variation from “it shows up in the writing” to using rubrics.

5. Do you feel that your students' level of demonstrated critical thinking skills has changed over the years since you began teaching? Has it a) improved b) stayed the same or c) declined? Please explain why you think so.

a) Probably improved. My uncertainty is that this process has been in place from the very beginning. The fact is we are getting better students, better prepared, and so the process is more rewarding and improving

a) Increased some. If you mean increased as a result of my teaching, then little. If you mean in general, then the answer is a guarded yes.

a) Students (at least at this level [lit course] and those who've been in Women's Studies courses) have a surprising background knowledge from past courses – linking to other texts, seeing connections

a) Yes it has improved. I've learned to ask for the right thinking.

a) For most students, I feel that it has improved a little. This has been reflected in their answers to CT-requiring questions on my tests.

a) It seems to have improved, but that may be attributed to my improved skills at composing assignments which enable them to demonstrate, if not to learn, critical thinking

b) Students are more inquisitive than when I was in school. Since I began teaching, no appreciable change, but it's only been 4 years

b) we have always taught critical thinking skills in ESOL. Our mission is to prepare students for success in academic programs. To succeed, they need not only language but also practice in the type of assignments required of American college students.

b) I have observed that the majority of students seem to have stayed the same in their ability to critically think. There are always a few top students who do well in the course, partly because of their critical thinking skills. The remainder of students do not demonstrate a strong level of critical thinking skills. I am sure that these students have had little experience with critical thinking.

b) students who are already prepared to do so, do it; students who are not prepared may/may not; cyclical nature of student classrooms means levels differ from year to year

b) about the same. But their reading skills have fallen. Their ability to write to an audience has not gotten better. But it is vital that they do this.

b) I think it's the same

b) Stayed the same. There has always been a percentage of students who do well with these assignments and those who do not. No general change. I do see improvements during the semester for individual students.

b) Stayed the same. That depends on where I was teaching. I think there is a definite difference in students at MCTC versus a 4-year college.

b) I have only been teaching at MCTC for 5 years. I have not noticed any significant changes – in each class of 50 students I feel a few have developed quite strong critical thinking skills.

c) I suppose, or feel that, or I suspect that I am better at fleshing out or insisting on “pursuing thinking further,” i.e., I take the time in class and/or responding to student writing & speaking to demand/account for a deeper level of CT from students. Maybe it's

old age, but I am worried/concerned/troubled by dilution of CT skills in the current batch of students.

c) Critical thinking is shaped within a cultural context. I began teaching in 1978 when CT skills were still decent. Skills were terrible in the 80s, better in the 90s, pretty bad since 9/11/01. Students don't read nearly as well as they did before the mid-80s.

c) Declined. Students need more explanation for assignments related to critical thinking.

c) Declined. Some are more willing to accept unsupported opinion pieces (e.g., blogs and internet "rants") as factual/reliable because they're published on the internet, and yet a few students are very wary of internet sources.

*Not enough years yet to judge

*I am very new to this particular population of students. However, I do notice that my older students tend to be more open to challenging, critical thinking type assignments. Younger students often seem frustrated with the lack of concrete right or wrong answers. Though this may just be due to developmental stage rather than background or previous education.

*I think students enter the class with a lack of awareness about the critical thinking they do in everyday life. We work on recognizing skills they already have and translating them into new arenas like writing. As I become a stronger teacher, they leave with more developed skills.

*I am a new teacher, so this doesn't really apply. But I will say that my students who have more challenging and complicated lives tend to have more advanced critical thinking skills than those who do not.

*Not having done such an evaluation before it's hard to say. Have we always taught CT even if we didn't have the label?

*I see students more likely to struggle with basic information. This actually aids the process, as they seem to realize how much they DON'T know

*I don't feel student skill level has changed over the years, so much as over the locations where I have taught. At more privileged institutions like the U and St. Thomas, I often found less available critical skills, while here at MCTC critical thinking, particularly around social issues, has remained fairly sharp.

*No answer

Observations: Some respondents didn't feel qualified to answer this question. Some interesting oppositions arose: MCTC students are better critical thinkers than those at 4-year schools BECAUSE of their life circumstances, vs. MCTC students struggle with critical thinking more than 4-year students. This points to probable differences in the ways these respondents define critical thinking

6. What would be most beneficial to you as a teacher to improve how you teach and assess critical thinking skills? (Note: I did not have the categories listed on the original survey; the responses are grouped for ease of reading.)

At the course/program level:

- More time (i.e., less content expectations)

- Overlap with other classes (e.g., psychology focuses on individual, but sociology focuses on group; debate info on nature/nurture, personality, personal responsibility, marriage, parenting, etc.)
- It helps a lot if the teaching of critical thinking skills is undertaken by ALL my colleagues. That way, I will be sure that no student that is in my class will be at a disadvantage when compared to his/her classmates.
- I just don't know. I think we are doing what needs to be done! Critical thinking is just part of our curriculum, it's embedded in it.

Across campus:

- Conversations like these are helpful to share best practices in how to assess critical thinking. Finding out what faculty from other disciplines are doing in critical thinking helps me know how to build and reinforce those skills.
- Continued participation in cross-disciplinary caucuses/workshops/semester-long embedded projects with a stipend attached to provide incentive and a more sustained effort.
- Discussion with other faculty, possibly at Faculty Development Days.
- I participated in the CT Caucus, which was enormously helpful
- Observe and participate in critical thinking assessment across disciplines/programs
- Involve students in assessment
- A conversation at the campus-wide level of unexamined class and race privilege/culture on this campus among administration/faculty. Also, more access to community resources that have well-articulated critiques to offer students/faculty.

Pedagogically

- Learn how to assign the assignment in an open way, but one which encourages critical standards
- Keep people off the Web. Keep them in the library. Keep them reading.
- Share ahead of time what is expected.
- Ask more questions as part of CT
- I find critical thinking skills in students to be intimately linked to reading skills. If students are struggling just trying to understand what a passage says or what the main idea of an essay or article is, they are unable to step back (i.e., have the intellectual distance) required to evaluate the information, message, logic, persuasive tactics, etc. that are displayed in the text.
- I must commit a great part of student contact time to insisting/ encouraging/ fostering/ nurturing students to simply trust and value the content of their own thinking and get it expressed in writing and speaking. Once they begin to trust and value the content of their own thinking, only then can we move on to developing a higher degree of CT skills.
- A frank recognition of the creativity and intuition involved in critical thinking, that it involves discontinuity rather than continuous reasoning. It cannot be

assessed accurately by left-brain linear Western assessment models anymore than a skilled violinist could be so assessed.

- Practical advice – I think the teaching circle concept is perfect for discussions/advice; personal experiences that can lead to concrete steps to improve in this area.
- What would be most beneficial to me is to try out some strategies & techniques that help students understand critical thinking. However with the courses I teach, I can't spend a bunch of time teaching critical thinking.
- I also am curious to hear about some creative ways of incorporating critical thinking assignments or tweaking some of what I already do.
- Get strategies/suggestions to prompt students to take a critical direction in assignments, get more under the surface to questions that underlie an issue
- Tangible examples, e.g., worksheets, handouts others have used, made available. Collaborative project possibilities, to learn how CT is taught in other disciplines.
- Examples of teaching strategies used by others, especially those felt to be effective in larger classes.
- Discussing the issue of critical thinking skills online vs. in-class
- Assess what has and has not worked
- D2L group modules so that students can read each other's work.
- Sample assignments and rubrics
- I would like more examples on how to assess critical thinking skills. I need assessment tools.
- To continue to evaluate the rubric and step by step instruction and assessments along the way.

Institutionally

- More time to develop and formalize assignments
- Frankly, though impractical perhaps, time (such as the time we spend on faculty development days) to sit down and work on specific strategies to implement in our specific courses. CT takes time. So does the development of assignments and assessments of it.
- Campus activities that connect with my work in class would be great
- More access to community resources (artists and other cultural workers) to bring into the classroom/bring the classroom to. More diversity of faculty and administration.
- More advisor contact, 2
- Support for comprehensive advising which enables students to place into appropriate courses and get critical thinking instruction early in their coursework.
- More support for students as a whole, 2
- More time for sharing of critical thinking exercises between faculty
- Learning Center support, 4
- Emergency support
- Smaller classes due to the various levels of students' skills, 5
- Well, smaller class sizes! Critical thinking can only be assessed via papers or essay exams and you cannot grade essays for 40+ students. This is the biggest

influence on teaching/assessing critical thinking. I have been using a rubric, which has helped greatly, and also giving students more time to think through critical thinking assignments.

- Smaller class sizes and more manageable course load: to evaluate, assess, and instruct critical thinking skills in writing, 150 students writing the pieces over the semester results in 2,400 student texts – a really impossible number to respond to meaningfully.

Observations: Most people responded to the “teaching” aspect of this question more than the “assessing” angle. Many people appreciate the opportunity to have a cross-disciplinary conversation. Faculty want more time to do this work and want to do it in meaningful ways. Faculty want models of assignments and assessments that work in a variety of applications. Faculty want an institutional commitment of time, access, and money.