South Texas Higher Education: Critical Thinking in the Classroom

Sue Bradley
Jack Bradley
Texas A&M University-Kingsville

Abstract

Changing demographics in the last two decades has increased the Hispanic population across the nation. In South Texas, the minority has become the majority. Current research identifies cooperative learning and critical thinking as major contributors in the achievement of Hispanic students. The purpose of this study was to conduct a cross sectional survey of college students’ perceptions of the level of critical thinking activity occurring in their university classrooms. Two groups were surveyed: freshmen and upper classmen. The findings of this study were rather disconcerting as the freshmen participants perceived more critical thinking behavior to be occurring in their classrooms, than the upper classmen. Students gave suggestions that critical thinking could be improved in university classrooms; primarily related to active student involvement, peer interaction, group projects, and class discussions.

“The under-education of Latino students constitutes a social and economic liability for the United States” (Gandara, 2004, p.57). This bold statement opens an article on building bridges to college for Latino students. According to Gandara, Latinos are the largest ethnic majority, yet are the least likely to graduate from high school and go on to college. Current demographics indicate a shift from a predominately European American population to one that is substantially non-white. “In 1980, 74 percent of the population consisted of European Americans; 14.5 percent African American; 8 percent Hispanic, and 3 percent other. In 2000, the profile changed, with a decrease in the European American population by ten percent and an increase in the other groups: 17 percent for Hispanics, 16 percent for African Americans and 3 percent for all others (Diaz-Rico & Weed, 2002, p.223).

Clearly, the increase in Hispanics plays a substantial role in the demographic shift. The Hispanic subgroups are also found in distinct geographic areas. Because of its proximity to México, the minority is now the majority in South Texas. But as the student population changed, has the classroom instruction changed? Exactly what constitutes effective instruction for Hispanic students? In a report for the Center for Research on Education, Diversity, and Excellence (2002), cooperative learning is identified as a major contributor to the achievement of Hispanic students. “This instructional approach stimulates learning and helps students come to complex understandings through opportunities to discuss and defend their ideas with others” (Padron, Waxman, & Rivera, 2002, p.12). This report continues to emphasize the importance of active student involvement and the need for a
change in the role of the educator from a lecturer to a facilitator of learning. Unfortunately change does not happen with ease.

It’s not uncommon to find university professors who see themselves as critical thinkers, progressive and even radical critics of the status quo, but who rely on orthodox pedagogical methods to transmit heterodox ideas...Some of these instructors proceed largely by lecturing, by fishing for right answers during discussions, even by giving grades. And that is its chief lesson that students will take away: not the explicit content of the course, but the idea that classrooms are places where students listen and memorize facts and figure out how to snag a good mark. (Kohn, 2004, p.93)

Since acquiring critical thinking skills is generally believed to be learned over time, it would logically follow that critical thinking would be a continued focus through higher education. What exactly is critical thinking?

**Historical Perspective**

What is the historical perspective on the development of critical thought and the belief in the practice of questioning? The goal in education today is to ensure that both knowledge, meaning the accumulation of facts, and critical thinking are valued equally. But, historically has this been the case? Were individuals rewarded for critical and creative thinking?

“One of the first thinkers in the history of critical thought is that of Socrates, a Greek teacher from some 2400 years ago. Socrates discovered a method of questioning that, when applied to the leaders of his day, convinced him that most of them could not rationally justify their claims to knowledge. They arrogantly answered his initial questions, but could not intelligently justify what they thought they knew. For this public exposure of the superficial thinking of authorities, Socrates was rewarded with execution” (Paul & Elder, 2002, p.137).

Fourteen-hundred years later the practice of questioning beliefs became acceptable. History has seen the concept of critical thinking evolve to emphasize gathering evidence leading to sound reasoning. The 20th century brought an understanding of the power of the school to virtually indoctrinate students to society. In Folkways (1940), Sumner addresses this issue: “Schools make persons all on one pattern, orthodoxy. School education, unless it is regulated by the best knowledge and good sense, will produce men and women who are all of one pattern, as if turned in a lathe” (p.630). In this text, he continues to emphasize that it’s the schools responsibility to develop critical thinkers to produce a good citizenry. John Dewey agreed and emphasized that humans need to be grounded in actual purposes or goals” (Paul & Elder, 2002, p.140). Piaget added the idea that humans need to “develop critical thought that is able to reason within multiple standpoints” (Paul & Elder, 2002, p.140).

As the concept of critical thinking grew, its diverse associations with creative problem solving, the question of behaviors related to critical thought arose. So what is
critical thinking? “Critical thinking is one way to judge arguments, advertising, and other information. It is a skill. Like most skills, the more you practice, the better you get at it” (Wandberg, 2001, p.16).

Davis & Rimm (1994) explain:
Critical thinking as evaluating biases, qualifications and consistencies of speakers, and evaluating assumptions, opinions, ambiguities, whether conclusions follow, and many others. Critical thinking as problem solving includes teaching students to identify assumptions and values, examine different sides of an issue and possible actions and make decisions or else teaching students to define a problem, select pertinent information, recognize assumptions, formulate hypotheses, and draw conclusions. (p.253)

Unfortunately, Gabler & Schroeder (2003) identifies the problem in the following, “Although educators at every level value critical thinking abilities, the skills associated with critical thinking are seldom taught overtly.” She also adds, “The need for individuals to think critically comes at a time when researchers have noted the limited influence of high school and college experiences on the thinking abilities of students” (p.19).

Unfortunately, “many teachers and students currently approach content, not as a mode of thinking, not as a system for thought, or even as a system of thought but, rather as a sequence of stuff to be routinely covered and committed to memory…Critical thinking in contrast approaches all content explicitly as thinking” (Paul & Elder, 2001, p.139).

In 1990, National Goals 2000 included critical thinking in education, and the “U.S. Department of Education established goals mandating critical thinking for all college graduates by the end of the century” (Bush, 1990, p.9)

The question remains: Are students from kindergarten through college experiencing a thoughtful curriculum in a positive critical thinking environment? The following study analyzes the perceptions of eighty college freshmen and 80 upper classmen related to their critical thinking experiences.

Methods
Participants
The study occurred in the southern part of the state of Texas, with participating students coming to us from a number of different schools in the area. Eighty-five of the participants were identified as interdisciplinary education majors with a widely diverse background in coursework. All of these students had already been accepted into Teacher Education, which designates these students as having reached at least junior status.

There were 82 respondents in the Freshman group. These students were part of an “Introduction to Education” class. Therefore, their reflections came from a more limited college experience.

Methods
Participants were given a Likert-type survey (SA, A, SD, D) and asked to reflect on their experiences related to critical thinking in the classroom. The survey was designed
using a series of overt teacher and student behaviors to facilitate student understanding of each item. These behaviors reflect the elements of critical thinking and characteristics that promote a positive critical thinking environment.

Paul and Elder (2001) identify eight basic features of all thinking by stating, “Whenever we think, we think for a purpose within a point of view based on an assumption leading to implications and consequences. We use concepts and theories to interpret data, facts and experiences, to answer questions, solve problems and resolve issues” (p.139).

Current studies identify the following as indicators of a positive thinking environment:

1. Student-centered discussions that feature students raising questions.
2. Students explain, analyze, and generalize topics.
3. Teacher raises challenging initial question, uses questions raised by students, and requires students to summarize points?
4. Teachers facilitate brainstorming and offer student choices in how they demonstrate their understanding.
5. Students and teachers participate in discussion practicing active listening while recognizing conflicting points of view.
6. Teacher joins students in learning rather than simply remaining just an authority figure. (Gabler & Schroeder, 2003, p. 24)

**Results**

The results of the survey were both startling and disconcerting. On each of the twenty items, the freshmen mean was higher than the upperclassmen mean. The items with the largest differences in means related to whether professor encourages students to expand on answers, whether multiple students are asked for their point of view in discussion, whether the professor asks “what if” or “why” questions, and whether the professor allows time for students to explain their thoughts and justify their points of view. The need for stimulating critical thinking and developing reasoning skills seemingly should increase as students get closer to the work force. However, the items with the smallest differences in means primarily revolved around students having the opportunity to learn from each other, helping each other solve problems, and answer questions. Students having the opportunity to relate new learning to past experiences also had a low difference in mean, certainly indicating a positive effort toward clarity of understanding. The critical thinking survey with the data attached follows, showing the difference between the freshmen and junior/senior means.

*Critical Thinking Survey with Data Attached*

**Critical Thinking Survey**

This survey is designed to evaluate your experience in higher education related to critical thinking. Please circle the appropriate answer, reflecting on your experience since you entered the university. Mark agree, strongly agree, disagree or strongly disagree.

<table>
<thead>
<tr>
<th>Key to Answering Choices:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree = SA</td>
<td>Agree = A</td>
</tr>
<tr>
<td>Disagree = D</td>
<td>Strongly Disagree = SD</td>
</tr>
</tbody>
</table>
I. Encourages Student Interaction/Cooperation

1. Students work in small groups in pairs.
   Senior/Junior Mean = 2.964  Freshmen Mean = 3.073  Difference = 0.108

2. Students respond to other students.
   Senior/Junior Mean = 3.025  Freshmen Mean = 3.244  Difference = 0.218

3. Students help others analyze and solve problems.
   Senior/Junior Mean = 2.894  Freshmen Mean = 3.049  Difference = 0.154

II. Encourages Students to Justify Ideas

4. Professor probes for multiple correct responses.
   Senior/Junior Mean = 2.682  Freshmen Mean = 3.037  Difference = 0.354

5. Students analyze sources of information for reliability, relevance.
   Senior/Junior Mean = 2.741  Freshmen Mean = 2.963  Difference = 0.222

6. Professor frequently asks, "Why do you believe this is true?"
   Senior/Junior Mean = 2.588  Freshmen Mean = 2.878  Difference = 0.289

7. Students have opportunities to relate new learning to past experiences.
   Senior/Junior Mean = 2.894  Freshmen Mean = 2.902  Difference = 0.008

III. Encourages Student Exploration of Alternatives

8. Multiple students are asked for their point of view in discussion.
   Senior/Junior Mean = 2.729  Freshmen Mean = 3.134  Difference = 0.404

9. Professor allows time for students to explain their thoughts and justify their point of view.
   Senior/Junior Mean = 2.694  Freshmen Mean = 3.037  Difference = 0.342

10. Professor establishes expectations for divergent responses.
    Senior/Junior Mean = 2.600  Freshmen Mean = 2.841  Difference = 0.241

IV. Asks Open-Ended Questions

11. Professor asks open-ended questions with multiple answers as frequently as single answer questions.
    Senior/Junior Mean = 2.588  Freshmen Mean = 2.878  Difference = 0.289
V. Models Reasoning Strategies

12. Professor uses clear examples to facilitate thought.   SA  A  D  SD  
   Senior/Junior Mean = 2.894   Freshmen Mean = 3.146   Difference = 0.252

13. Professor poses “what if” questions.  
   SA  A  D  SD  
   Senior/Junior Mean = 2.647   Freshmen Mean = 3.025   Difference = 0.377

VI. Elicits Verbalization of Student Reasoning & Clarification

14. Professor poses “why” questions to facilitate higher order thinking.   SA  A  D  SD  
   Senior/Junior Mean = 2.823   Freshmen Mean = 3.171   Difference = 0.347

15. Professor allows “think time” following questions.  
   SA  A  D  SD  
   Senior/Junior Mean = 2.729   Freshmen Mean = 2.976   Difference = 0.246

16. Professor encourages students to expand on answers.  
   SA  A  D  SD  
   Senior/Junior Mean = 2.729   Freshmen Mean = 3.183   Difference = 0.453

VII. Encourages Students to Ask Questions

17. Professor poses problematic situations.  
   SA  A  D  SD  
   Senior/Junior Mean = 2.694   Freshmen Mean = 2.927   Difference = 0.232

18. Professor encourages students to explore possibilities by withholding the correct answer.  
   SA  A  D  SD  
   Senior/Junior Mean = 2.65   Freshmen Mean = 2.96   Difference = 0.304

19. Professor encourages students to answer other student’s questions.  
   SA  A  D  SD  
   Senior/Junior Mean = 2.552   Freshmen Mean = 2.707   Difference = 0.154

VIII. Promotes Silent Reflecting of Ideas

20. Professor allows time for reflection  
   SA  A  D  SD  
   Senior/Junior Mean = 2.611   Freshmen Mean = 2.866   Difference = 0.254
General Patterns

On all twenty items, the freshmen mean was higher than the junior/senior mean, indicating that freshmen students perceive that they are experiencing more critical thinking in their classes than the junior/senior students.

Items with the Largest Differences in Means
Item 16 [0.453], item 8 [0.404], item 13 [0.377], item 14 [0.347], and item 9 [0.342].

16. Professor encourages students to expand on answers.  SA   A   D   SD
   Senior/Junior Mean = 2.729   Freshmen Mean = 3.183   Difference = 0.453

8. Multiple students are asked for their point of view in discussion.
   Senior/Junior Mean = 2.729   Freshmen Mean = 3.134   Difference = 0.404

13. Professor poses “what if” questions.
   Senior/Junior Mean = 2.647   Freshmen Mean = 3.025   Difference = 0.377

14. Professor poses “why” questions to facilitate higher order thinking.
   Senior/Junior Mean = 2.823   Freshmen Mean = 3.171   Difference = 0.347
9. Professor allows time for students to explain their thoughts and justify their point of view.

\[
\begin{array}{c|c|c|c|c|c}
\text{SA} & \text{A} & \text{D} & \text{SD} \\
\text{Senior/Junior Mean = 2.694} & \text{Freshmen Mean = 3.037} & \text{Difference = 0.342} \\
\end{array}
\]

**Student Comments**

Perhaps the most interesting information came from the open-ended responses from the students. Students were to finish the following statement:

“I believe critical thinking can be enhanced in university classrooms by:”

Both groups had multiple responses related to:
1. a reduction in lecture time.
2. increased time in open discussion.
3. a question-asking atmosphere will open-ended divergent responses.
4. hands-on projects, challenging activities.
5. having their teachers listen to them, time to think about the question and formulate responses.
6. encouraging students to express their point of view or opinion on something expressed in class.
7. improving the types of questions asked.
8. having smaller classes so small groups are more workable.
9. getting the professor and the students to know each other.
10. letting students figure things out for themselves to a certain extent.
11. allowing students to respond to peers within class time.
12. using critical thinking type tests instead of multiple-choice tests.

One thought-provoking comment came from a freshman who said that critical thinking could be enhanced by “Giving professors a checklist of the survey things and have them implement them in their curriculum. The main problem I’ve noticed is there isn’t enough time to respond and students do not respond because they don’t want to be wrong or in discord with the teacher’s personal views. They fear being “labeled” with an impression about who they are, so their grade may be affected subjectively rather then objectively.”

**Discussion**

Unfortunately, the results of the study indicate that both the freshmen and the junior/senior students perceive the need for more critical thinking in their classes. Even more disconcerting, on all twenty items on the survey, the freshmen mean was higher than the junior/senior means. We expected the reverse, thinking that upper level classes would be preparing students for subsequent entry into the work force.

As a department, we feel challenged to be models in creating critical thinking classrooms. The three items on our survey with the largest differences in means between junior/senior students and freshmen all relate to increasing student talk. These include items: 16. Professor encourages students to expand on answers; 8. Multiple students are asked for their point of view in discussion; and 13. Professor poses “what if” questions. Are these not skills that prospective employers expect our graduates to possess?
Open-ended responses from students in both groups pointed to a need for active student involvement in small groups and in open discussion. We might have expected students to respond that they were experiencing this type of instructional activities.

Some concern exists if we staunchly equate all critical thinking to be defined solely by our narrow set of skills. The elements of teaching that facilitate critical thinking can vary with the type of setting and purpose for instruction. Educators agree that the purpose of education is to create an informed citizenry capable of participating in global affairs. In all subjects, students use language to master skills, develop reasoning and logic skills, and grow into maturity. Disciplines have joined together to acknowledge their interdependence. These essentials of education include the ability to use language to communicate and think, to use mathematics to solve problems, to use abstraction and symbols to apply scientific methods, to reason logically, to utilize technology, to understand the arts, language, and culture, to apply knowledge about health, nutrition, and physical activity, to acquire the ability to meet unexpected challenges, to make informed value judgments and to basically go on with learning for a lifetime. The purpose of the items on the survey was to stimulate thinking and talking.

It is our hope that instructors who read this study will more readily implement suggested critical thinking activities in their own classrooms. Critical thinking is a process. A simple conclusion can be drawn from the study: Instructors in higher education need professional development, just as public school teachers do.

Are we promoting critical thinking in our classrooms? Wilkenson and Durrow (1990) address this issue in “Encouraging Independent Thinking.” Their text begins as if a student is talking, “I don’t know if this is the answer you want, but...The student’s eyes are fixed on the instructor, watching for a sign that it’s safe to proceed...Classmates watch and listen, so that when their turn comes they at least know what not to say” (p.249).

So how does the effective professor get beyond this barrier? “From the onset, we should emphasize that most questions have more than one side. It is not necessary to go to the length of the instructor who told his colleagues they must never utter a conclusive statement...but one should mention conflicting schools of interpretation or alternative explanation where they exist” (Wilkenson & Durrow, 1990, p.252). In addition, sometimes our views change over time and “it is useful to show classes how our evaluations have altered and explain why we have abandoned some of our earlier views” (Wilkenson & Durrow, 1990, p.250). How can we send the message to our students that it is perfectly acceptable to have a differing viewpoint than ours? Wilkenson & Durrow (1990) cited two good examples:
1. Intentionally selecting one of a poet’s worst sonnets and then praising the only student who admitted he didn’t like it.
2. Having students pretend to be lawyers presenting a case. Both sides of the issue get presented. (p.252)

For Further Study
1. It would be interesting to survey students at the other universities in South Texas, using a similar instrument. In doing this study we sometimes wondered if the participants had a common understanding of the terms and concepts used.
2. It would be interesting to replicate this study in other parts of the country, away from the Texas A&M University-Kingsville area. Professors could survey their students to see if they perceive that critical thinking is happening in their college classroom.
References


