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AUTHOR McKinzie, Evonne
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ABSTRACT

An initiative to assess educational quality at Bemidji State University (Minnesota) involved asking 622 students (82% of intended 750 students) whether they thought they were receiving a liberal education and whether they believed that liberal education is a necessary component of higher education. Liberal education in this study was defined as that part of higher education which includes critical thinking, cultural diversity, responsible citizenship, global understanding, value clarification, and scientific and quantitative reasoning. Each of these components was also defined. Results suggest that not only did the majority of students believe that they were not receiving the intended outcomes of a liberal education, but more than half the respondents felt that a liberal education is not a necessary component of higher education. Information is provided on findings for the following research questions: views of undergraduate students on the need for liberal education, views of freshmen and sophomores compared to juniors and seniors regarding a liberal education, differences in views by students in different study fields, views of students based on their final grades, the effect of student age on views regarding a liberal education, views of students who felt they were well prepared in high school versus those who felt they were not well prepared, and whether students felt they were encouraged to see relationships among disciplines. (Contains 19 references.) (SW)

The Quality Initiative in Minnesota: What One University is Doing With Assessment

Evonne McKinzie
Assistant Director of Institutional Research
Bemidji State University
1500 Birchmont Dr. NE
Bemidji, MN 56601
218-755-2007
e-mail: emck@vax1.bemidji.msus.edu

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The Quality Initiative in Minnesota: What One University is Doing With Assessment

Abstract

Liberal education is a timeless concern. In this period of quality improvement initiatives, assessing institutional effectiveness in the area of liberal education is evident. Instead of assessing the intended outcomes of liberal education from an institutional perspective (i.e. asking the faculty and administration), this study asks the intended receivers of a liberal education at one institution whether they believe they are receiving a liberal education. In addition, this study asks students whether they believe liberal education is a necessary component of higher education. The results suggest that not only does the majority of students believe they are not receiving the intended outcomes of a liberal education, more than half of the respondents feel liberal education is not a necessary component of higher education.

for Management Research, Policy Analysis, and Planning

This paper was presented at the Thirty-Fifth Annual Forum of the Association for Institutional Research held at the Boston Sheraton Hotel & Towers, Boston, Massacusetts, May 28-31, 1995. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum Papers.

Jean Endo
Editor
AIR Forum Publications

Introduction and Background

In 1990, a group of distinguished Minnesotans who are leaders of education, labor, business, agriculture, and medicine came together to deal with the challenges and opportunities facing higher education. The task was to recommend a set of quality indicators which would serve as guidelines for future decisions affecting the educating of our students not only for the present, but into the 21st century. The group was called the Blue Ribbon Commission on Access and Quality in the Minnesota State University System. In the Commission's report, Q-7: Quality on the Line (1990), seven indicators of high quality were set forth:

- students who are prepared for college
- graduates who can think critically and solve problems
- graduates who have a global vision
- graduates who have a multicultural perspective
- graduates who are scientifically literate
- graduates who are ready for work
- graduates who are good citizens and who behave ethically

The Q7 initiative provided the impetus for the collection of baseline data to assess the quality of education from students, faculty, and alumni of Bemidji State University. This study analyzes data collected from the student survey Are You Receiving the Quality of Education You Really Need? A Student Perspective (1992).

Literature Review

Any definition of liberal education is bound to be imperfect. Some elements of liberal education, such as critical thinking and responsible citizenship, have always been a part of the definition. Other elements, such as multicultural awareness and global understanding, have been included more recently in response to the changing times.

Critical thinking is probably the most cited element of liberal education. Through critical thinking, students are provided with the foundation of openness, fairness, impartiality, and reasonableness with which conflicting interpretations and competing claims can be analyzed and evaluated. Critical thinking consciously raises questions such as: What do we know...? How do we know...? Why do we accept or believe...?, and, What is the evidence for...? (Arons, 1985; Rhodes, 1985).

A tolerance for diversity, where one can accept that the beliefs, customs, and attitudes of other people may differ from one's own without being threatened or destroying one's own personal

identity (Stephens, 1988) is one of the contemporary elements of a liberal education. A liberally educated person is able to have private assumptions challenged and come away with a broader common understanding.

A liberally educated person will also examine value-laden issues, such as the responsible use of the earth, justice, distribution of wealth and power, and peace; issues that go beyond the purpose of material wealth and personal gain.

Satisfying the nation's need for an enlightened citizenry has always been an important goal of liberal education and is even more evident at the present. Contests of money and image-making have become the emphasis in political races rather than debates over issues. Add to this the ignorance by a large proportion of the citizenry about the most basic political issues, and the need seems ever more urgent (Burke & Rumberger, 1987).

Mathematical and scientific reasoning are also elements of a liberal education commonly found in current literature. They give students the ability to understand scientific and technological progress and the role they may play in the larger scheme of things.

Emphasizing the connectedness of knowledge rather than discrete bits of specialized information is another important aspect of liberal education. This sense of connectedness leads to an understanding of the larger issues of people's lives and times and their significance on a personal, ethnical, and global scale. It allows students to see the interrelatedness of the disciplines, of our world in its sociological, biological, and physical dimensions, of rich and poor, of men and women, and of past, present, and future (Wee, 1987; Rhodes, 1985).

The above mentioned elements of a liberal education most often cited in current literature as well as the indicators of quality put forth by the Blue Ribbon Commission provide the basis for defining liberal education for this study.

But if liberal education is going to provide the outcomes that its definition indicates, reforming pedagogy is clearly the most challenging dimension to be pursued (Spear, 1989). The pedagogy found in most liberal education teaching is the traditional lecture. Spear (1989) argues that professors need to do more than profess -- they need to practice, and thus guide novices in active practices of inquiry. Without this active role, students' learning processes are inhibited and are viewed as solitary and competitive (Astin, 1988). Even though the lecture is considered a good vehicle for faculty to pass on insights they have derived from studying a subject for years, Michalek (1986) says the lecture seldom gives students the opportunity to synthesize or search for insights on their own. Adler (1982) summarizes the problem by saying, "All genuine learning is active, not passive. It involves the use of the mind, not just memory. It is a process of discovery, in which the student is the main agent, not the teacher" (p.51).

Now that the intended outcomes of a liberal education and the far-reaching advantages of being liberally educated have been set forth, what do the students think? The literature consistently reports that students' perceptions are far from positive. Toole (1987) feels that the perceptions of

students reflect the social currents of the time. We live in a highly competitive and materialistic society, where the worth of individuals is often what they own and how visible or prestigious they are.

Students want a detailed grasp of a specialized field and the training and skills needed for a job. College is viewed not so much as a place to learn but as a means to more money and better-paying jobs (Hesburgh, 1981; Astin, 1989). They are impatient with, and find it difficult to see any value in courses that do not fit their personal concept of career preparation. Students are fixed on careers from the moment they first walk into college entrance doors. In fact, most high school seniors declare their majors on their college application forms. As a result, liberal education courses are perceived as requirements imposed by a higher authority, possessing little relevance to career goals (Gregory, 1984; Stephens, 1988).

Advisors (usually faculty members) often fail to provide convincing rationale for liberal education. They are often the first to talk about "getting liberal education out of the way" (Wee, 1987; Gaff, 1983). Liberal education is then perceived as an impediment to "real" education or "important" education. Gaff (1983) responds, "in such a context, liberal education becomes at best an empty slogan and at worst a series of barriers to overcome on the way to acquiring a college degree" (p.29).

If liberal education is a passage through a set of courses and nothing more, it will remain trivialized within the institution as well as in the minds of the students. For liberal education to succeed, higher education institutions need to meet head on the initial insistence by most students that they are only interested in narrowly useful facts. This insistence, for the most part, is simply modeling from advisors, instructors, parents, and peers. Gregory (1987) insists that these perceptions can be dissolved much more easily than most instructors believe.

Definition of Terms

Liberal education: For the purpose of this study, that part of higher education which includes critical thinking, cultural diversity, responsible citizenship, global understanding, value clarification, and scientific and quantitative reasoning.

Critical thinking: Evaluating and criticizing premises or formulating new ones. Development of perceptive analytical and critical judgment through the use of higher thinking skills of analysis, synthesis, and evaluation of arguments.

Cultural diversity: Understanding, empathy, and ability to communicate with people from different cultures and ethnic and minority groups. To realize other ways of life are as valid as one's own.

Responsible citizenship: The linking of rights with responsibility so that the sharing of

power, through the political process, ensures decision makers remain accountable. Going beyond immediate family and friendship circles to create and shape other institutions, i.e. work, government, education, recreation, etc.

Global understanding: Economic, political, environmental, and ethical understanding of the world. Viewing the world as an interconnected system in which a change in any part of the system will have a ripple effect upon the rest.

Value clarification: Knowledge directed toward humane ends. Learning through the comparative study of major value systems, that all people search for meaning in their lives. Knowledge that helps students make discriminating moral judgments.

Quantitative and scientific reasoning: Utilizing methods of inquiry. To critically examine and interpret others' research methods and design.

Research Questions

Two major research questions were pursued in this study:

1. Do undergraduate students at Bemidji State University state they are receiving a liberal education?
2. Do undergraduate students at Bemidji State University believe liberal education to be a necessary component of higher education?

Subsidiary questions relating to the first major research questions ask students if they be they are receiving each component of a liberal education as identified in this study. Subsidiary questions relating to the second major research questions ask different groups of students whether they believe in the necessity of liberal education as a component of higher education.

Two subsidiary questions relating to pedagogy will also be addressed:

1. Are students mainly prepared to memorize facts or apply knowledge?
2. Are students encouraged to see relationships among disciplines?

Limitations of the Study

Viewing perceived need for liberal education and whether students are being liberally educated entails understanding the limitations of students' perceptions. Perceptions may accurately reflect the object that is being viewed or they may not. Factors such as human senses, the unknown, attitudes, values, misinformation, and past experiences may influence perceptions. It is therefore assumed that the respondents comprehend what is being asked of them.

The range of questions examined in this study is limiting because of the lack of diverse

questions to test. Aesthetic sensitivity, for example, was not tested as a component of liberal education. Two reasons offered: It was not mentioned as often in the literature as the other dimensions chosen for this study, and the research instrument failed to address this dimension. Also, for the purpose of this study, a distinction has not been made between liberal education and general education. Liberal education, as used in this study, has an affective, as well as a cognitive component.

Because this study was conducted at only one institution, the results are exploratory and may not be applicable to other higher education institutions.

Design and Method

Procedure

The sample for this study was drawn from the total student population (N=4352) at Bemidji State University (1991-1992). A stratified sampling technique was used to aid in the selection of the desired sample from two subpopulations: freshmen/sophomores and juniors/seniors. For the freshmen/sophomore subpopulation, the university class enrollment roster was used to perform representative sampling. First, all 9:00 a.m. classes were identified. From these, the classes with the largest enrollments were chosen. The sample of juniors and seniors was chosen by identifying the largest core classes in each of the four academic divisions.

In each class selected to participate in the survey, a brief explanation of the survey was read to the students. Students were also told that participation was voluntary. Survey administrators remained in the classroom and collected completed surveys and any from students who chose not to participate. Of the intended 750 students to be surveyed (300 from each subpopulation), 622, or 83%, returned a completed questionnaire.

Reliability of Items Included in Each Measure of Liberal Education

Cronbach's alpha was used to measure the reliability of the items in each measure. All correlations were positive, therefore there is reason to believe that the items are correlated with each other. Cronbach's alpha was also calculated when each of the items was removed from the measure. This resulted in one item being removed from the value clarification measure. Items Included In Each Measure of a Liberal Education Dimension:

Critical Thinking

Considering your college education so far, to what extent are you being prepared for each of the following?

a. To discover underlying patterns and meaning in experiences and information that confront one on a daily basis.
b. To use equations, formulae, analogies, models, constructs, categories and/or metaphors in problem solving.

c. To view knowledge as a system of causes, consequences and relationships.
d. To explore ranges of possibilities and outcomes of actions and ideas by testing them against previous assumptions.
e. To understand the processes by which bits and pieces of knowledge are linked together.
f. To communicate concepts through oral presentations, reports, designs, memoranda, layouts, scripts and projections.
g. To utilize teams to identify, plan, and communicate solutions to problems.
h. To use analytic and persuasive abilities to bring about change.
i. To be able to contrast, compare, and synthesize.
j. To understand and confront my own and the prejudices and biases of others.
k. To use the political process as a vehicle to express anger, concerns, and values.

Cultural Diversity

Considering all of your coursework, how often have you encountered each of the following in your studies?

a. Studied similarities and differences in language, thought and actions of several cultural and/or racial groups.
b. Studied the significance of racial, ethnic, and cultural differences.

Taking your university education to mean all the courses, studies and activities you have performed, how often has your education included each of the following?

c. Attending events sponsored by ethnic groups different from one's self.
d. Studying social, legal, psychological and/or philosophical issues related to ethnic and gender differences.
e. Reading literature, poetry and/or social and scientific works written by women and minority authors.
f. Examining prejudice, sexism, racism in a non-confrontational manner.

Responsible Citizenship

Considering your college education so far, what extent are you being prepared for each of the following?

a. To use the political process as a vehicle to express anger, concerns, and values.

How often have you done the following so far in your college career?

b. Studied ethical and political value in doing scientific research.

Considering all of your coursework, how often have you encountered each of the following in your studies?

c. Thoroughly considered several political structures.

Taking your university education to mean all the courses, studies and activities you have performed, how often has your education included each of the following?

d. Considering employment problems faced by minorities, people with disabilities, and

women.

Global Understanding

Considering all of your coursework, how often have you encountered each of the following in your studies?

a. Had indepth discussions about differences in meanings of words from one language to the next.
b. Examined weather and climate as they affect world food production.
c. Compared international rates of birth, death and patterns of relocation.
d. Compared world markets in terms of import-export access and restrictions.
e. Studied transfer of money, labor, or raw materials across national boundaries.
f. Studied similarities and differences in language, thought, and actions of several cultural and/or racial groups.
g. Studied the significance of racial, ethnic, and cultural differences.
h. Discussed reasons for different educational attainment of various world populations.
i. Thoroughly considered several political structures.
j. Compared different cultural groups by beliefs, values, and behaviors.

Value Clarification

How often have you done the following so far in your college career?

a. Discussed the meaning of science and/or mathematics from a philosophical perspective.

Considering all of your coursework, how often have you encountered each of the following in your studies?

b. Compared different cultural groups by beliefs, values, and behaviors.

Taking your university education to mean all the courses, studies and activities you have performed, how often has your education included each of the following?

c. Composing your own values with those of other cultural and ethnic groups in America.
d. Considering values without assuming all the value systems have equal merit.
e. Learning that judgments of morality can be made across cultures.

Scientific and Quantitative Reasoning

How often have you done the following so far in your college career?

a. Read articles from scientific and/or research journals.
b. Used a mainframe or microcomputer for data analysis.
c. Planned and performed experiments largely on your own or with a teammate.
d. Collected and analyzed numerical data.
e. Written about information contained in a table.
f. Discussed the meaning of science and/or mathematics from a philosophical perspective.
g. Critically examined differences in qualitative and quantitative research methods.
h. Reviewed literature by examining what several writers said about the same scientific or

mathematical issue.

i. Learned to question the underlying assumptions involved in scientific and/or mathematical thought.
j. Worked on a paper that was to be published or presented at a professional meeting.
k. Studied ethical and political value in doing scientific research

Data Analysis

Summary scores across a set of items measuring each dimension were computed. Answers to questions ranged from 1 = High, Very Much, and Often to 4 = Not, None, and Never. Each answer was then assigned a weight to better indicate the strength of the response. Weight assignments are:

High, Very Much, Often = 8
Medium, Some, A Few Times = 5
Slight, A Little, Once = 2
Not, None, Never = 0

Summary scores of the weighted responses were then put into quartiles to provide a standardized measure of the percentage of respondents' scores falling into each category. The categories were assigned levels of perceived outcomes of liberal education: top, upper middle, lower middle, bottom. The determination made for this study is that outcomes not falling in the top or upper middle quartile are not adequate outcomes of liberal education.

Chi-square analysis was used to test relationships between student's belief in the necessity of liberal education and several variables. A significance level of .05 was set for all Chi-square analyses. Frequency counts were used to test whether students, as a whole, believed in the necessity of liberal education. Frequency counts were also used to test students' perceptions on the pedagogy-related questions.

Results

Research Question 1: Do undergraduate students at Bemidji State University state that they are receiving a liberal education?

In analyzing this question and the subsidiary questions relating to it, the results of scores for each dimension find that critical thinking is the only component of liberal education that has the majority of respondents' weighted scores falling in the top and upper middle quartiles (24.2% in the top quartile and 53% in the upper middle quartile).

Cultural diversity had 47.1% of the respondents' scores falling in the top and upper middle quartiles. The responsible citizenship dimension of liberal education revealed only 6.9% of the

scores were in the top quartile and 25.9% in the upper middle quartile. The liberal education dimension of global understanding had only 7.2% of respondents' scores in the top quartile. About one fourth (25.3%) of the respondents' scores were in the bottom quartile of the global understanding dimension of liberal education. Only 30.6% of the respondents' scores indicated students believed they were receiving value clarification, with only 5.0% of these scores in the top quartile. Scientific and quantitative reasoning found only 4.7% of the respondents' scores in the top quartile. Sixty-seven percent of the scores fell into the lower middle and bottom quartiles.

Table 1:
Do Undergraduate Students at Bemidji State University State That They Are Receiving a Liberal Education?

Liberal Education Dimensions	Top Quartile (%)	Upper Middle Quartile (%)	Lower Middle Quartile (%)	Bottom Quartile (%)
Critical Thinking (n=611)	24.2	53.0	19.1	3.6
Cultural Diversity (n=611)	12.1	35.0	32.7	20.1
Responsible Citizenship (n=607)	6.9	25.9	37.1	30.1
Global Understanding (n=613)	7.2	29.5	38.0	25.3
Value Clarification (n=609)	5.0	25.6	41.3	26.0
Scientific & Quantitative Reasoning (n=615)	4.7	28.3	42.1	24.9

Research Question 2: Do undergraduate students at Bemidji State University believe liberal education to be a necessary component of higher education?

Of the 609 respondents, 38.9% (n=237) stated that they believed a liberal education is a necessary component of higher education. Approximately 10% of the sample felt liberal education is unnecessary. See Table 2.

Table 2:

Do Undergraduate Students at Bemidji State University Believe Liberal Education To Be a Necessary Component of Higher Education?

Count	Necessary	Helpful, But Not Necessary	Unnecessary
	n/%	n/%	n/%
N = 609	237/38.9	308/50.5	64/10.5

Subsidiary Question: Do freshmen and sophomores perceive the necessity of liberal education different that juniors and seniors?

The freshman/sophomore category had 33.2% (n=94) of the respondents stating liberal education was necessary compared to 42.7% (n=138) of those in the junior/senior category. The two categories had about an equal percentage who stated liberal education was unnecessary. These findings support a study by Theophilides, Terenzini, and Lorang (1984) that found that freshman and sophomore students give vocational and career-related skills precedence over other educational goals, including liberal education. Juniors and seniors, however, lean more toward a balance between vocational and liberal education, with seniors feeling college should provide chiefly a "basic education and appreciation of ideas" as the most prevalent educational goal. See Table 3.

Table 3:
Chi-Square Relationships: Belief In the Necessity of Liberal Education With Class Standing

Class Standing	Necessary n/%	Helpful, But Not Necessary n/%	Unnecessary n/%	Row Totals n/%
Freshman/ Sophomore	94/33.2	158/55.8	31/11.0	283/46.5
Junior/ Senior	138/42.7	151/46.7	34/10.5	323/53.3
Column Totals	232/38.3	309/51.0	65/10.7	**606**

$\chi^2(2, N = 606) = 6.0, p = .0491$

Subsidiary Question: Do students majoring in certain disciplines perceive the necessity of liberal education differently?

Because the cell counts were too low for many of the major counts, majors were combined into their respective divisions. At the time this study was conducted, the university had four divisions: 1) professional and applied studies, 2) humanities and fine arts, 3) social and natural sciences, and 4) science and math.

Respondents with declared majors in humanities and fine arts (n=73) had over one half, or 50.7% (n=37) believing liberal education was necessary. In the other three divisions, approximately 50% of the declared majors in each division, stated liberal education was helpful, but not a necessary component of higher education. Results are shown in Table 4. These findings are somewhat consistent with a study done at Michigan State University (Burhans, 1984) that found that humanities and English majors produced 77 percent and 45 percent, respectively, more identifications on civic and cultural items than the average number identified by students in other majors. Education majors, on the other hand, produced 20 percent fewer identifications on the same list of items than the average.

Table 4:
Chi-Square Relationships: Belief in Necessity of Liberal Education With Division of Declared Major

Division	Necessary n/%	Helpful, But Not Necessary n/%	Unnecessary n/%	Row Totals n/%
Prof. & App. Stds. (n=250)	82/32.8	130/52.0	38/15.2	250/42.4
Hum. & Fine Arts (n=73)	37/50.7	32/43.8	4/5.5	73/12.4
Social & Nat. Sci. (n=150)	63/42.0	76/50.7	11/7.3	150/25.4
Sci. & Math (n=117)	42/35.9	62/53.0	13/11.1	117/19.8
Column Totals	224/38.0	300/50.8	66/11.2	**590**

$\chi^2(6, N = 590) = 14.2, p = .0271$

Subsidiary Question: Do students who receive higher grades perceive the necessity of liberal education different than those who receive lower grades?

Although no support was found in the literature, it was expected that students receiving higher grades would feel liberal education more necessary than those receiving lower grades. It is felt that these students would place a high importance on all their courses, including liberal education. Table 5 shows there is evidence that a relationship does exist. Almost 50% (n=135) of the respondents in the "A and B" category believed liberal education was necessary. For those respondents in the "B and C" category, 56.1% (n=179) stated that liberal education was helpful, but not necessary. Of those respondents who received final grades of C, D, and E, 60% (n=12) stated that liberal education was helpful, but not necessary.

Table 5:
Chi-Square Relationships: Belief In the Necessity of Liberal Education With Final Grades Most Frequently Received

Final Grades	Necessary n/%	Helpful, But Not Necessary n/%	Unnecessary n/%	Row Totals n/%
A and B	135/49.8	119/43.9	17/6.3	271/44.4
B and C	96/30.1	179/56.1	44/13.8	319/52.3
C, D, and E	5/26.3	12/60.0	3/15.8	20/3.3
Column Totals	236/38.7	310/50.8	64/10.5	**610**

$\chi^2(4, N = 610) = 29.4, p = .0001$

Subsidiary Question: Do older than average students perceive the necessity of liberal education different than younger students?

Heydinger (1985) says that older than average students come to college mostly because they are seeking to retool for a career change. For this reason it would seem that this group of students would be more drawn to a vocational model of higher education than even the younger student. The findings of this study, however, did not prove that a relationship existed. Table 6 shows the results. Non-traditional, or older than average, students are classified as those 25 years of age or older.

Table 6:

Chi-Square Relationships: Belief in Necessity of Liberal Education With Age

Age	Necessary n/%	Helpful, But Not Necessary n/%	Unnecessary n/%	Row Totals n/%
Traditional	183/37.2	251/51.0	58/11.8	492/81.3
Non-Traditional	50/44.2	55/48.7	8/7.1	113/18.7
Column Totals	233/38.5	306/50.6	66/10.9	**605**

$\chi^2(2, N = 605) = 3.2, p = .2065$

Subsidiary Question: Do students who feel they were better prepared in high school perceive the necessity of liberal education different than those who feel they were not well prepared?

Although not found in the literature, it was expected that students who feel they have been well prepared in high school will have a more positive feeling toward liberal education. With a significance level of $p = .3414$, it was not proved that a relationship exists between high school preparation and belief in the necessity of liberal education. See Table 7.

Table 7:
Chi-Square Relationships: Belief In the Necessity of Liberal Education With High School Preparation

HS Preparation	Necessary n/%	Helpful, But Not Necessary n/%	Unnecessary n/%	Row Totals n/%
Very Well	60/42.3	67/47.2	15/10.6	142/23.2
Moderately Well	102/40.0	133/52.2	20/7.8	255/41.6
Not Very Well	55/34.2	82/50.9	24/14.9	161/26.3
Not At All	22/40.0	26/47.3	7/12.7	55/9.0
Column Totals	239/39.0	308/50.2	66/10.8	**613**

$\chi^2(6, N = 613) = 6.8, p = .3414$

Two subsidiary questions were addressed regarding the pedagogy students believed was being utilized at Bemidji State University. The first question asked the students whether their education so far had mainly prepared them to memorize facts, knowledge or subject material or mainly prepared them to apply knowledge to solve problems. Tables 8 and 9 show the results. More than one half of the respondents stated their college education so far had mainly prepared them to memorize. When testing for a relationship between memorizing or applying and the student's class standing, 63.4% (n=166) of students in the freshman/sophomore category stated they were mainly being prepared to memorize as opposed to apply. These findings are consistent with the literature stating that the pedagogy most commonly found in liberal education courses is the lecture. Of the junior/senior respondents, 54.2% (n=163) felt they were being prepared to apply what they were being taught compared to 36.6% (n=96) of students in the freshman/sophomore category.

Table 8:
Are Students Mainly Prepared To Memorize Facts or Apply Knowledge?

Count	Memorize Facts n/%	Apply Knowledge n/%
N = 575	310/53.9	263/45.7

Table 9:
Chi-Square Relationships: Student's Preparation To Memorize Facts, Knowledge, or Subject Matter or Apply Knowledge To Solve Problems With Respondent's Class Standing

Class Standing	Memorize Facts n/%	Apply Knowledge n/%	Row Totals n/%
Freshman/ Sophomore	166/63.4	96/36.6	262/46.5
Junior/ Senior	138/45.8	163/54.2	301/53.5
Column Totals	304/54.0	259/46.0	**563**

$\chi^2(1, N = 563) = 19.6, p = .0001$

The second subsidiary question relating to pedagogy asked students if they are encouraged to see relationships among disciplines. Almost 17% (n=104) of the total respondents answered "very often" compared to almost 23% who stated they "seldom, if ever" were encouraged to see relationships. Table 10 show the finding of this question. Table 11 suggests there is a significant relationship between students' belief that they are being encouraged to see relationships among disciplines and student's class standing. Eleven percent (n=31) of the respondents in the freshman/sophomore category stated they were encouraged to see relationships very often. This

compares to 2.7% (n=73) of the junior/senior respondents who also answered "very often." At the other extreme, 28.7% (n=81) of students in the freshman/sophomore category were seldom, if ever encouraged to see relationships. Of those in the junior/senior category, 17.4% (n=56) stated they seldom, if ever were encouraged to see relationships.

Table 10:
Are Students At Bemidji State University Encouraged To See Relationships Among Disciplines?

Count	Very Often n/%	On Several Occasions n/%	Only Occasionally n/%	Seldom If Ever n/%
N = 614	104/16.9	169/27.5	201/32.7	140/22.8

Table 11:
Chi-Square Relationships: Student's Belief That They Are Encouraged To See Relationships With Class Standing

Class Standing	Very Often n/%	On Several Occasions n/%	Only Occasionally n/%	Seldom If Ever n/%	Row Totals n/%
Freshman/ Sophomore	31/11.0	76/27.0	94/33.3	81/28.7	112/46.7
Junior/ Senior	73/22.7	91/28.2	102/31.7	56/17.4	322/53.3
Column Totals	104/17.2	167/27.6	196/32.5	137/22.7	**604**

$\chi^2(3, N = 604) = 20.6, p = .0001$

Conclusions

The findings of this study suggest students at one institution, in their perceptions, are not receiving an adequate liberal education. Consistent with other research (Toole, 1987; Astin, 1989; Gregory, 1984, 1987; Gaff, 1983; Stephens, 1988), undergraduate students in this study feel liberal education is not necessary. In light of this, two major challenges face the university and higher education in general. The first is to guarantee that the intended outcomes of liberal education are being met. Liberal education should not merely be an artifact of the university catalog. Liberal education committees or others charged with reviewing or evaluating liberal education in academe must be proactive so as to ensure the liberal education curriculum and delivery gives students what they perceive to be an adequate liberal education. This means institutes of higher education cannot graduate students who might have adequate levels of one, two, or even three dimensions of liberal education. They must possess all the dimensions in order to be truly liberally educated. Another major challenge is changing students' preconceived beliefs about liberal education. This challenge goes out to all members of the university community. Although academic advisors and faculty members seem to have the greatest opportunity to enthusiastically embrace the concept of liberal education to students, student affairs officers and other administrators and staff can carefully nurture this concept so that liberal education becomes part of the ethos of the institution.

Students are a reflection of the larger society. A question colleges and universities must ask themselves is: "Do we graduate students with minds that are expandable or with minds that are stiff and brittle?"

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