University of Guam
College of Liberal Arts & Social Sciences
Social &Behavioral Sciences

Dec 21, 2005
~~September 28, 2005~~

To: James Sellmann
        Associate Dean, CLASS

Fr: Harley Manner
        Professor

Re: Assessment Results for GE 101
        Part 1. Pre- and Post-test Results

Jim, Here is the Sept 28 report sent to you earlier; it is now reformatted for the web.

Assessment Results for GE 101
Part 1. Pre- and Post-test Results

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September 28, 2005

Introduction

Geography 101 (Introduction to Geography) is a service course and a component of the Gen Ed category The Individual and Society. The student learning objectives for the course include enhancing geographic literacy and a greater appreciation and understanding of the field of geography, including the models and tools (e.g., maps) that geographers use to solve problems, fostering a greater understanding of the complexity of the world that we live in and the necessity for multidisciplinary approaches to problem solving, and recognizing and applying geographic principles and concepts in daily activities. Some of the specific things that students can do after taking the course are:

a. Locate places using a system of mathematical coordinates in an arbitrary grid system (absolute location).
b. Describe locations in terms of relationships with other locations.
c. Use maps as a primary geographic tool and to answer questions about the distribution of earth features.
d. Identify and locate a large number of important places and features in many parts of the world.
e. Discuss meaningfully why places are important to individual human identity and as symbols for unifying a society.
f. Explain why human activities require movement and why movements reflect global patterns of
interactions between people in near and distant countries.
g. Describe how changes in technology, transportation and communications, have affected The rates at which people, products and their ideas move from place to place.

In the Fall semester 2005, I conducted a student learning assessment exercise in GE 101 (Introduction to Geography) in response to WASC's mandate. This exercise consisted of a pre-test and post-test, using a multiple choice format. The results of this exercise are presented in this report.

Methods

On the first day of class August 17, 2005, students were administered a pretest of 10 multiple choice questions, randomly selected from a battery of exam questions. The questions were based on material presented in the first 3 chapters of the course textbook. A copy of the pretest is labeled as Attachment 1. Only the results of students who took both exams are presented. On September 23, 2005 the student took the post-test as a part of their first midterm exam (based on chapters 1-3 of the textbook). The 10 questions asked during the pre-test were embedded in a midterm exam of 60 multiple choice questions.

Results and Discussion

Twenty eight students took both the pre- and post-tests. The test scores for student who did not take both tests are not included in the results. The results and statistics for the pre-test and post-test are presented in Table 1. The simple means for the pre- and post-tests were 4.32 and 7.03, respectively and highly significant at the 0.0001 probability level. The results clearly indicate that learning took place.

The results suggest that students have little comprehension of geographic concepts before they take the course, but improve greatly as the course proceeds.

The data suggest an improvement in geographic literacy, a greater understanding of geography, its models and tools (e.g., maps) that geographers use to solve problems, and application of geographic principles and concepts in daily activities. Unfortunately some students failed to learn much as signified by their poor post-test scores. There were 11 students who scored six or less on the post-test, despite the availability of the instructor and the month-long availability of the correct pre-test answers, as well as the course materials.

The same 10 questions will be given during the final exam in order to determine how well students have retained the material. They will not be coached about the inclusion of these 10 questions. The questions will be given as a bonus set so as to not jeopardize their grades during the evaluation process.

Conclusion

Most student are capable of learning the material. Some clearly have learned, some better than others; others have not. Some fruitful work should be done on why "Johnny can/cannot learn. A follow-up study will be conducted in order to determine long term retention of the tested geographic concepts at the end of the course.

Table 1. Results of Pre and Post Test for Geography 101

Pre-test 8/17/05	Post-test 9/23/05
Scores	Scores
4	10
4	5
4	10
6	6
4	9
6	6
5	9
4	5
4	2
3	9
0	7
8	9
5	7
5	3
4	5
6	7
5	9
1	3
3	10
6	10
7	10
5	9
3	7
2	9
3	1
5	6
6	5
3	9

Statistics t-Test: Paired Two Sample for Means

	Variable 1	Variable 2
Mean	4.321429	7.035714
Variance	3.041005	6.998677
Observations	28	28
Pearson Correlation	0.182069	
Hypothesized Mean Difference	0	
df	27	
t Stat	-4.96749	
P(T<=t) one-tail	1.66E-05	
t Critical one-tail	1.703288	
P(T<=t) two-tail	3.32E-05	
t Critical two-tail	2.051829	

Attachment 1

University of Guam

GE101-Fall 2005
Pretest Exam (Non-graded)

_____
(Name and ID number)

Part 1. Multiple Choice. Select the best answer for each of the following statements and mark the appropriate space on your Computest form. Each statement is worth 1 point = 60 points.

1. An example of a formal region is
    a. the trade area of St. Louis, Missouri.
    b. 25 square kilometers.
    c. Dixie
    d. The region flown by Continental Micronesia

2. Every projection has some degree of distortion because
    a. a curved surface cannot be represented on a flat surface without distorting curvature.
    b. parallels and meridians never cross at right angles on a globe.
    c. the grid system is two-dimensional but the earth is three-dimensional.
    d. a sphere is a developable surface.

3. A contour interval
    a. is the vertical spacing between contour lines.
    b. connects points of equal elevation above sea level.
    c. is a single map in a topographic series.
    d. heightens the graphic effect of a topographic map.

4. Which of the following is the largest scale?
    a. 1:8,000   b. 1:24,000   c. 1:50,000   d. 1:63,360

5.. If it is 3 p.m. at the Royal Observatory in England, what time is it at 45°E longitude?
    a. 2 p.m.   b. 12 noon   c. 1 p.m.   d. 6 p.m.

6. A geographic information system (GIS) is primarily based on   the use of
    a. the electromagnetic spectrum.
    b. remote sensing.
    c. a computer.
    d. a thermal scanner.

7   Alfred Wegener is best known for his
    a. numerical scale of earthquake magnitude.
    b. theory of plate tectonics.
    c. discovery of subduction
    d. invention of the seismograph

8. The huge sections of the earth's crust that move slowly over partially molten material are called
    a. terminal moraines.   b. central massifs   c. megaliths   d. lithospheric plates.

9. A zone of subduction is associated with the occurrence of
    a. deep-sea trenches and mountain ranges.
    b. mid-ocean ridges and volcanoes.
    c. transform faults and earthquakes
    d. relatively flat terrain on the ocean floor.

10. The main focus of geography that distinguishes it from other disciplines, is the study of the characteristics of
    a. time.   b. place.   c. physical phenomena.   d. cultural phenomena.

100 Million Women Are Missing: An Assessment of Critical Thinking In The Interpretation
and Analysis of Information in GE 101 (Introduction to Geography).

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January 15, 2007

In the second in-term GE 101 exam for Spring 2005, the students were given a choice of answering one of five questions for bonus points. These questions ranged in point value from five to 20 points, depending on their level of difficulty and the analysis required. Some were simple, listing-type questions, while others required more analysis and interpretation. The questions were based on the readings from the required textbook, from lecture material, or a combination of both. Of the 25 students who took the exam, 11 chose to answer the following question: "What is the evidence that 100 women are missing?" This question was worth 6 points and was based on a ½ page case study from their textbook which the students were to have read before the exam (see Attachment 1). The answer to the question was the natural differences in the sex ratio at birth (of 105 males to 100 females for most countries) in contrast to those of China, India and other Asian countries where the sex ratio at birth is upwards of 120 males to 100 females. In these Asian countries, there is a cultural preference of males over females; and given the one child per family policy in China, and other socio-cultural factors, fewer females have been born since the advent of ultrasound gender scanning before birth.

The rubric for scoring the question was as follows:

Points	Explanation
6	Very well crafted answer; brief and to the point, containing all necessary information in a logical sequence
5	Good answer, contains most of necessary information, but a bit wordy
4	Correct answer, but not well thought out and logically presented.
3	Grammatically poor and unorganized answer, Answer mainly a collection of poorly presented facts (not logically presented)
2	Paragraph well constructed and grammatically sound, but containing inappropriate information
1	Short, illogical answer. Very inappropriate answer
0	No answer or unintelligible answer

The student scores and statistics for the Spring 2005 question are presented in Table 1.

Table 1. Student scores and statistics for bonus points, second in-term exam, Spring 2005

Score	Descriptive Statistics	
2	Mean	1.863636
1	Standard Error	0.416102
1	Median	1
1.5	Mode	1
1	Standard Deviation	1.380053
5	Sample Variance	1.904545
4	Kurtosis	1.946417
2	Skewness	1.706321
1	Range	4
1	Minimum	1
1	Maximum	5
	Sum	20.5
	Count	11
	Confidence Level(95.0%)	0.927132

Given the low mean score, an "open book" test was devised for the following semester in order to determine the reasons for the low scores and to help improve student learning.

In the Fall semester 2005, two days after their scheduled second in-term exam (in October), students were asked to read the case study in class and to then write a paragraph in answering the same question cited above: "What is the evidence that 100 women are missing?" This was an "open-book" exam with the objective of determining whether students were capable of reading, comprehending what they read, writing a well-constructed paragraph which demonstrated a logical, synthesized, and well reasoned answer. Twentyfour students took this "exam".

The exam was scored using the same rubric presented earlier. The statistics for this "open-book" exam are presented in Table 2.

Table 2. Student scores on "open book" exam on 100 million missing women, Fall 2005

Score	Score	Descriptive Statistics	
3.5	3	Mean	2.95833333
3.5	0	Standard Error	0.38059434
3	6	Median	2.75
5	2.5	Mode	1
5	2	Standard Deviation	1.86452387
1	2	Sample Variance	3.47644928
2.5	1	Kurtosis	-1.12745109
1	2	Skewness	0.32925766
6	1	Range	6
6	3	Minimum	0
5	1	Maximum	6
5	1	Sum	71
		Count	24
		Confidence Level(95.0%)	0.78731831

Given that this was an open book exam, the scores are very low. While the scores are higher than the "closed book exam" taken in the Spring 2005 semester, they are still quite low and they suggest any of the following:

1. Students are poorly prepared for tertiary level work, and/or
2. Students have poorly developed reading and other critical thinking skills.
3. Many students are mathematically challenged. They do not seem able to understand ratios and their significance.

Of course, there are other explanations. It may be that the textbook is too difficult for first year students. However, this explanation is highly unlikely as the textbook is a standard first year text used by many colleges and universities throughout the US. Alternatively, students should not be allowed to take first year level courses in Geography until they have achieved a junior or senior level standing (a surrogate for higher reading, thinking and writing levels). For the moment and until more information is available, I can also suggest that the poor performance may be related to the open enrollment status of the university.

Table 3 compares the scores for the two "exams". The t-test statistic of −1.9412678 is significant at the 0.01 level of probability, indicating that students have some reading/thinking abilities. It would be to the students' benefit if they were to have additional developmental work in critical thinking and related skills.

Table 3. Comparison of scores for the Spring and Fall 2005 "Exams"

Student scores Spring 2005	Student Scores Fall 2005	
2	3.5	3
1	3.5	0
1	3	6
1.5	5	2.5
1	5	2
5	1	2
4	2.5	1
2	1	2
1	6	1
1	6	3
1	5	1
	5	1

t-Test: Two-Sample Assuming Unequal Variances

	Spring 2005	Fall 2005
Mean	1.863636364	2.958333333
Variance	1.904545455	3.476449275
Observations	11	24
Hypothesized Mean Difference	0	
df	26	
t Stat	-1.941267769	
P(T<=t) one-tail	0.031568987	
t Critical one-tail	1.705616341	
P(T<=t) two-tail	0.063137975	
t Critical two-tail	2.055530786	

100 Million Women Are Missing

Worldwide, some 100 million females are missing, victims of nothing more than their sex. In China, India, Pakistan, New Guinea, and many other developing countries, a traditional preference for boys has meant neglect and death for girls, millions of whom are killed at birth, deprived of adequate food, or denied the medical attention provided to sons favored as old-age and wealth-gathering insurance for parents. In both China and India, ultrasound and amniocentesis tests are employed, often against government directives, to determine the sex of a fetus, so that it can be aborted if it is a female.

The evidence for the missing women starts with one fact: about 106 males are conceived and born for every 100 females. Normally, girls are hardier and more resistant to disease than boys, and in populations where the sexes are treated equally in matters of nutrition and health care, there are about 105 to 106 females for every 100 males. However, the 2001 census of India found just 93.2 females for every 100 males, whereas in China nearly 10% of all girls of the 1990s birth cohorts are "missing," and in 2000 there were 120 boys under age 5 for every 100 girls. China's 2000 census recorded a national average disparity in births of 117 boys for every 100 girls—a deepening imbalance from the 1990 census ratio of 111 newborn boys to 100 newborn girls. Even higher year 2000 differentials were registered in Hainan and Guangdong provinces in southeastern China, with newborn ratios of between 130 and 140 males to 100 females.

Ratio deviations are most striking for second and subsequent births. In China, South Korea, Taiwan, and Hong Kong, for example, the most recent figures for first-child sex ratios are near normal but rise to 121 boys per 100 girls for a second Chinese child and to 185 per 100 for a third Korean child. On that evidence, the problem of missing females is getting worse. Conservative calculations suggest there are more than 60 million females missing in China alone, almost 5% of the national population and more than are unaccounted for in any other country.

The problem is seen elsewhere. In much of South and West Asia and North Africa, there are only some 94 females for every 100 males, a shortfall of about 12% of normal (Western) expectations. A 2000 United Nations report on South Asia suggests the "100 million" world total of missing females is an understatement. It declares that abortions of female fetuses along with infanticide and the food favoratism shown boys have meant that 79 million lost females are attributed to discrimination in South Asia, including some 40 million in India alone.

But not all poor countries show the same disparities. In sub-Saharan Africa, where poverty and disease are perhaps more prevalent than on any other continent, there are 102 females for every 100 males and, in Latin America and the Caribbean, there are equal numbers of males and females. Cultural norms and practices, not poverty or underdevelopment, seem to determine the fate and swell the numbers of the world's 100 million missing women.