

Comparison Pre and Post Test Results
722-252: Human Environmental Problems – Fall 2004
Sections: 3,4,5

Test Design

To assess success in learning and teaching effectiveness, a 15 question, multiple-choice test was administered on the first and last day of class. There was no study guide or discussion of results, and the questions were drawn from lecture materials (attachment A).

Test Results

After completion of the semester’s materials, the mean score increased from 50% to 63% and the median score increased from 53% to 67%. The minimum score increased from 13% to 27%, and the maximum score increased from 87% to 93% (Table 1). 133 students took the pre-test and 102 took the post-test. I did not complete a comparison of pre and post-test performance for each student, although I can do this if requested (Attachment B).

Table 1

Descriptive Statistics							
	Mean	Median	Mode	Range	Min	Max	Count
Pre-Test	0.50	0.53	0.53	0.73	0.13	0.87	133.00
Post-Test	0.63	0.67	0.67	0.67	0.27	0.93	102.00

A standard grading scheme was used, with A=90%, B=80%, C=70%, D=60%, F<60%. No curve or adjustment to the grades was applied. The distribution of letter grades improved between the pre and post-tests. The grades showed a more normal distribution after covering the semester’s materials (Table 2).

Table 2

	Letter Grade Frequency				
	A	B	C	D	F
Pre-Test	0	5	4	37	87
Post-Test	2	14	16	38	32

Interpretation of Results

There were modest improvements in performance between the pre and post-tests. Overall, it was surprising at how low the averages were for the post-tests. It was not expect that the students would still have an average score of 67% after spending a semester covering the material. It is difficult to determine if this is a result of the questions being poorly designed or if there were issues with how lecture material was delivered. There is also the possibility that the students did not take the test seriously, as they knew it was not graded. Further results from additional sections during 2004 and 2005 are included as separate documents.

Attachment A

1. Describe the primary difference between conservation and preservation. (B)
 - a. Preservation is the wise use or careful management of resources to attain the maximum possible social benefits from them, while conservation is the nonuse of resources or limited resource development for the purpose of saving resources for the future.
 - b. Preservation is the nonuse of resources or limited resource development for the purpose of saving resources for the future, while conservation is the wise use or careful management of resources to attain the maximum possible social benefits from them.
 - c. Preservation is the nonuse of resources or limited resource development for the purpose of saving resources for the future, while conservation is the use of a resource at the maximum profitable short-term rate without regard for long-term resource quality or availability.
 - d. Preservation is the use of a resource at the maximum profitable short-term rate without regard for long-term resource quality or availability, while conservation is the nonuse of resources or limited resource development for the purpose of saving resources for the future.
2. What are externalities? (A)
 - a. Externalities are nonmarket exchanges.
 - b. Externalities are taxes to make corporations pay for the pollution they generate.
 - c. Externalities are market exchanges.
 - d. Externalities are laws designed to protect the environment.
3. What is the importance of the National Environmental Policy Act? (B)
 - a. It removes the requirement for Environmental Impact Statements for Federal projects.
 - b. It requires preparation of Environmental Impact Statements for Federal projects.
 - c. It establishes the Endangered Species Act.
 - d. It establishes the Environmental Protection Agency.
4. Define an ecosystem. (C)
 - a. The study of the interrelationships between living organisms and the living and nonliving components and processes that make up their environment.
 - b. The collection of all living organisms in a geographic area.
 - c. The collection of all living organisms in a geographic area, together with all the living and nonliving things they interact with.
 - d. A major ecological region within which plant and animal communities are similar in general characteristic and in their relations to the physical environment.
5. How many people live on earth today? (D)
 - a. 11.4 billion
 - b. 3.4 billion
 - c. 9.4 billion
 - d. 6.4 billion
6. What was the Green Revolution? (A)
 - a. Development of agricultural technologies that increased crop yields in the 1960's.
 - b. Development of environmental regulations in the United States in the 1960's.
 - c. Development of environmental activist groups in the United States in the 1960's.
 - d. Development of Chinese environmental regulations in the 1960's.
7. How is an old-growth forest different from a second-growth or plantation forest? (B)
 - a. Old growth forests are less diverse than second-growth or plantation forests.
 - b. Old growth forests are more diverse than second-growth or plantation forests.

8. List the three main causes of extinction. (B)
- Pollution, hunting, and species invasion
 - Habitat loss, hunting, and species invasion
 - Pollution, habitat loss, and species invasion
 - Habitat loss, hunting, and lack of environmental regulations
9. What importance do estuaries have for marine fisheries? (B)
- No importance; they are biological deserts.
 - Great importance, they are the ocean's nurseries.
 - Estuaries are a source of pollution that harms marine fisheries.
 - Estuaries are protected zones where marine fisheries cannot be overfished.
10. What percent of the world's water is freshwater? (A)
- 2.5%
 - 5.5%
 - 10.5%
 - 0.5%
11. How is ground level ozone different from stratospheric ozone? (D)
- There is no difference.
 - Both are pollutants, but ground level ozone is less dangerous than stratospheric ozone.
 - Ground level ozone protects humans from ultraviolet radiation, while stratospheric ozone is a primary component of smog.
 - Ground level ozone is a primary component of smog, while stratospheric ozone protects humans from ultraviolet radiation.
12. Which of the following is an expected impact of global warming? (E)
- None of the following.
 - Ocean levels will rise.
 - Agricultural production will improve in some parts of the world.
 - Some species will have to migrate north to survive.
 - All of the above.
13. Which of the following is an environmental impact of mining? (C)
- Water pollution
 - Air pollution.
 - Both of the above.
 - None of the above.
14. Name three types of renewable energy sources. (A)
- Hydroelectric, solar and wind.
 - Nuclear, solar and wind.
 - Petroleum, solar and wind.
 - Electricity, solar and wind.
15. What does it mean to be sustainable as a human race? (D)
- To recognize that there are no limits to growth and the ultimate resource is human innovation.
 - To halt economic growth altogether, and severely limit human population.
 - Economic growth without environmental responsibility; could not be carried on indefinitely without resource depletion.
 - Economic growth with environmental responsibility; could be carried on indefinitely without resource depletion.

Attachment B

LAST	FIRST	Pre-test			Post-test		
		#RIGHT	% Pre Grade	Pre	#RIGHT	% Post Grade	Post
GRIFFIN	AMANDA	n/a	n/a	n/a	12	80%	B
WISER	ERIKA	n/a	n/a	n/a	11	73%	C
THOM	EMILY	n/a	n/a	n/a	10	67%	D
MCPHON	BRIDGET	n/a	n/a	n/a	9	60%	D
GREEN	BRIAN	n/a	n/a	n/a	9	60%	D
OSBORN	MELINDA	n/a	n/a	n/a	9	60%	D
PATEL	NIRALI	n/a	n/a	n/a	8	53%	F
PATEL	NIRVI	n/a	n/a	n/a	7	47%	F
BEILFUSS	EMILY	n/a	n/a	n/a	7	47%	F
UHRIG	ARLEY	13	87%	B	n/a	n/a	n/a
LAURIN	ADAM	13	87%	B	13	87%	B
PICHE	SCOTT	13	87%	B	12	80%	B
SIEG	NATHAN	13	87%	B	7	47%	F
CAPENER	KELLY	12	80%	B	n/a	n/a	n/a
SHIMER	WILLIAM	11	73%	C	n/a	n/a	n/a
EILERT	REED	11	73%	C	n/a	n/a	n/a
OLSON	BRET	11	73%	C	10	67%	D
STONE	MARY	11	73%	C	8	53%	F
BLACKSTONE	SETH	10	67%	D	n/a	n/a	n/a
BORTH	KELLY	10	67%	D	n/a	n/a	n/a
DICKMAN	SAMANTHA	10	67%	D	n/a	n/a	n/a
KIEL	DOUGLAS	10	67%	D	n/a	n/a	n/a
SCHNEBLE	JESSICA	10	67%	D	n/a	n/a	n/a
ANDERSON	KIMBERLY	10	67%	D	13	87%	B
GOETSCH	HEATHER	10	67%	D	11	73%	C
SCHMITT	LUCAS	10	67%	D	11	73%	C
MCKELVEY	REBECCA	10	67%	D	10	67%	D
SNYDER	EDWIN	10	67%	D	10	67%	D
KRIEBEL	LEAH	10	67%	D	9	60%	D
BERNARDS	CARRIE	10	67%	D	9	60%	D
KARTHEISER	NIC	10	67%	D	9	60%	D
MCKENZIE	HOLLY	10	67%	D	9	60%	D
STEFFENS	AMANDA	10	67%	D	8	53%	F
DAHMS	KATHLEEN	10	67%	D	7	47%	F
KROSCHER	JAY	10	67%	D	5	33%	F
GOETHEL	JENNIFER	9	60%	D	n/a	n/a	n/a
LEWIS	TONYA	9	60%	D	n/a	n/a	n/a
MCDONALD	JOHN	9	60%	D	n/a	n/a	n/a
SADOWSKI	HEIDI	9	60%	D	n/a	n/a	n/a
SUHLING	ALISON	9	60%	D	14	93%	A

BURNS	MEGHANN	9	60%	D	13	87%	B
SMITH	NICOLE	9	60%	D	12	80%	B
SCHOELLER	ERICH	9	60%	D	12	80%	B
HALL	MEGAN	9	60%	D	11	73%	C
KLIMASZEWSK	MARIE	9	60%	D	10	67%	D
HOFFMAN	KATHERIN	9	60%	D	10	67%	D
JASKOWIAK	RYAN	9	60%	D	10	67%	D
TROIA	JENNIFER	9	60%	D	10	67%	D
BUSS	SHANNON	9	60%	D	10	67%	D
LECKER	JAMIE	9	60%	D	10	67%	D
WENDT	LEAH	9	60%	D	10	67%	D
YOW	JOANNA	9	60%	D	10	67%	D
MEIKLEJOHN	TABITHA	9	60%	D	9	60%	D
HESS	STEPHANI	9	60%	D	8	53%	F
RIESOP	JOSHUA	9	60%	D	7	47%	F
LEMBRICH	KATHERIN	8	53%	F	n/a	n/a	n/a
WINKLEMAN	JULIE	8	53%	F	n/a	n/a	n/a
LANE	BRIAN	8	53%	F	n/a	n/a	n/a
PAYSEUR	LOREN	8	53%	F	n/a	n/a	n/a
PERSZYK	MATT	8	53%	F	n/a	n/a	n/a
ELDER	JAMES	8	53%	F	12	80%	B
MOERTL	STACY	8	53%	F	12	80%	B
HERTEL	CAROLYN	8	53%	F	12	80%	B
JOHNSON	LISA	8	53%	F	12	80%	B
WEBER	KIMBERLY	8	53%	F	12	80%	B
GROSSHEIM	ANDREW	8	53%	F	11	73%	C
KNOLL	MARY	8	53%	F	11	73%	C
LUPI	GINA	8	53%	F	11	73%	C
BARWICK	BRANDON	8	53%	F	11	73%	C
JOHNSON	DANIEL	8	53%	F	11	73%	C
PLANTIKOW	PAULA	8	53%	F	11	73%	C
MILLER	JOSH	8	53%	F	10	67%	D
GALLE	COURTNEY	8	53%	F	10	67%	D
KRAUS	JESSICA	8	53%	F	10	67%	D
ANDERSON	KELLY	8	53%	F	9	60%	D
KOBACK	NICOLE	8	53%	F	6	40%	F
TRUEBLOOD	CHRISTI	8	53%	F	5	33%	F
KALK	KEVIN	7	47%	F	n/a	n/a	n/a
STARK	NICOLE	7	47%	F	n/a	n/a	n/a
DAY	STEPHANI	7	47%	F	n/a	n/a	n/a
LAMURO	CHRIS	7	47%	F	n/a	n/a	n/a
ONEIL	KELLY	7	47%	F	n/a	n/a	n/a
LYNCH	IAN	7	47%	F	n/a	n/a	n/a
BUSHONG	JUSTIN	7	47%	F	12	80%	B

SMESSAERT	JOSEPH	7	47%	F	12	80%	B
MECHA	WILLIAM	7	47%	F	12	80%	B
RIESOP	JEREMY	7	47%	F	10	67%	D
RECHLICZ	SARA	7	47%	F	9	60%	D
BILLE	EMILY	7	47%	F	9	60%	D
KUEHL	JENNA	7	47%	F	9	60%	D
MORRIS	ANGELA	7	47%	F	9	60%	D
SCHWARTZ	STEPH	7	47%	F	9	60%	D
TITRUD	SHONI	7	47%	F	7	47%	F
STUFF	ERIN	7	47%	F	5	33%	F
THIELE	HENRY	6	40%	F	n/a	n/a	n/a
CORBETT	NIKI	6	40%	F	n/a	n/a	n/a
EMERY	AMY	6	40%	F	n/a	n/a	n/a
SHAWCROSS	MEGAN	6	40%	F	n/a	n/a	n/a
ANDERSON	SARAH	6	40%	F	14	93%	A
FORRESTER	MIKE	6	40%	F	11	73%	C
LOHFF	MACKENSI	6	40%	F	11	73%	C
HELMS	JESSICA	6	40%	F	10	67%	D
TSAO	ARLE	6	40%	F	10	67%	D
GROSSO	MELISSA	6	40%	F	10	67%	D
SPIESS	NATALIE	6	40%	F	9	60%	D
STARKS	JAVONNI	6	40%	F	9	60%	D
TYSON	JENILEE	6	40%	F	9	60%	D
CAMINATA	SARAH	6	40%	F	8	53%	F
COKER	JULIANA	6	40%	F	8	53%	F
NOVAK	JULIE	6	40%	F	8	53%	F
ROSS	RACHEL	6	40%	F	8	53%	F
CLAAS	NICOLE	6	40%	F	7	47%	F
EDENHOFER	JULIE	6	40%	F	7	47%	F
ROELKE	DAN	6	40%	F	6	40%	F
DOE	UNKNOWN	5	33%	F	n/a	n/a	n/a
EWING	KYLE	5	33%	F	n/a	n/a	n/a
HALBESMA	SARAH	5	33%	F	n/a	n/a	n/a
LYNES	NATHAN	5	33%	F	n/a	n/a	n/a
SZUPIKA	DAN	5	33%	F	n/a	n/a	n/a
HANSEN	REBEKAH	5	33%	F	11	73%	C
RING	KELLY	5	33%	F	11	73%	C
BELAND	SARAH	5	33%	F	9	60%	D
DEGOLIER	HOLLY	5	33%	F	8	53%	F
JOHNSON	MELISSA	5	33%	F	8	53%	F
MULLER	ANNA	5	33%	F	8	53%	F
VALADEZ	MARIA	5	33%	F	7	47%	F
SPEISER	AMY	5	33%	F	4	27%	F
BRUNNER	CYNTHIA	4	27%	F	n/a	n/a	n/a

GIERACH	BRAD	4	27%	F	n/a	n/a	n/a
VAN SICKLE	NATALIE	4	27%	F	n/a	n/a	n/a
CORTEZ	ANGEL	4	27%	F	n/a	n/a	n/a
FURMAN	AMY	4	27%	F	n/a	n/a	n/a
HOPPER	GARRY	4	27%	F	n/a	n/a	n/a
ANDERSON	KATRINA	4	27%	F	10	67%	D
RUSCH	RUSCH	4	27%	F	8	53%	F
WNEK	JODI	4	27%	F	8	53%	F
MCCARTY	KRISTIN	4	27%	F	8	53%	F
DEGOLIER	LORI	4	27%	F	7	47%	F
HODGE	STEPHANI	4	27%	F	7	47%	F
EVRARD	SARAH	3	20%	F	11	73%	C
SIKORA	EMILY	2	13%	F	n/a	n/a	n/a
BECKMANN	STEPH	2	13%	F	5	33%	F