In order to obtain information on the status of geographical knowledge possessed by University of South Dakota (Vermillion) students, a geography survey designed to determine specific knowledge about the locations of bodies of water, countries, and cities was conducted. One map was used for identifying cities, while the second was used for identifying bodies of water and countries. The survey was administered to 660 students. If 70 percent is regarded as a passing grade at the college/university level, then the students in this study failed in their knowledge of locations of water bodies, countries, and cities. The highest mean correct response was 67 percent for locations of water bodies. The location of countries was a distant second with a mean response rate of 40 percent. Locations of cities was the lowest of the three categories with a mean response of 32 percent. The study indicates a statistically significant difference between those students who have had a geography class in high school and those who have not. However, the mean of correct responses of locations of water bodies for those who have had a geography class is 71 percent barely a passing score. For those having had a geography class the mean scores for locating countries and cities is only 43 percent and 35 percent respectively. Data are illustrated in tables. The geography survey which was administered in the study is appended. (SM)
Geographical Knowledge of University Students

Robert W. Wood, Charles Eicher, Loraine Webster, and Arlen Gullickson
School of Education
The University of South Dakota

May, 1988

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Robert W. Wood

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Running Head: GEOGRAPHICAL
Geographical Knowledge of University Students

According to a recent news article, when over 1800 college students in North Carolina were asked to locate the Seine River, only a third of them knew it was in France. Of Freshmen tested at St. Mary--f-the-Woods College in Indiana, ninety-five percent could not locate Vietnam on a map. In north Dallas, one out of five twelve-year-olds mistook Brazil for the United States on a map of the world (Solorzano, 1985). These findings are not unlike those of a study done in 1982 by the Association of American Geographers which was given to 3000 students at 185 colleges and universities. In this survey of basic geographical knowledge, college seniors missed half the questions. The final report of this study, "Geography and International Knowledge," concluded that Americans' knowledge of basic geography is appallingly low (Shabad, 1982).

National organizations are also alarmed at the lack of geographical knowledge possessed by students on all levels of education. The National Geographic Society and the Southern Governors' Association have both prepared documents concerning the lack of geographical and international awareness.

Today there is a general movement to correct what is perceived as a lack of global perspective in our society. Educational reformers increasingly call for more study of
geography, more attention to the ultimate benefits of foreign languages, and more international content throughout the curriculum. Knowing our international neighbors is becoming a priority item to many Americans.

Before curricular changes can be made it is essential that educators have base-line information on the status of geographical knowledge possessed by their students. This was the case at The University of South Dakota. Data were missing on the number of students who had taken a high school geography course and the knowledge of locations of water bodies, countries, and cities held by these students. The time was right to conduct a geographical knowledge survey of selected students at The University of South Dakota.

Research Procedures

A geography survey designed to determine specific knowledge about the locations of bodies of water, countries, and cities was created by modifying a geography test which appeared in ACCESS (1987, pp. 8,9). The original test was one in which lists of bodies of water, countries and cities were used. In the modified version of the test used in this study most of the same water bodies, countries, and cities were used but two maps were used instead of one so that test-takers could read them more easily. One map was used for identifying cities while the second one was used for identifying bodies of water and countries. A brief biographical data section was incorporated into the beginning of
the survey.

With the help of the English Department the survey was administered to 660 students enrolled in freshmen English literature classes at The University of South Dakota. A step-by-step instruction sheet was provided for all English instructors administering the survey in their classes. The instructions were to be read to the students to ensure administration procedures were standardized with all classes. The students completed the survey in September, 1987, the data were entered into the University computer and the findings were analyzed.

Results

Table 1 reflects an overall analysis of the geography survey, giving the average percentage correct in each of the three location categories (water, country, city) for the total sample of students completing the survey. For the location of ten water bodies, the mean response rate was sixty-seven percent. Of the locations of thirty-three countries, the mean response was forty percent correct, while for the thirty-three cities a mean response rate of thirty-two percent was achieved by the students.

Insert Table 1 about here

Student responses were analyzed by a two-way analysis of variance, with male/female responses as one independent variable, and the other independent variable being whether or not students
had taken a high-school geography class. Three two-by-two analyses were conducted to determine the effects of the two independent variables, sex and geography class, with each of the three location categories, water, country, and city. Table 2 gives means of interaction effects between sex and geography class with locations of water bodies. The table also shows means of correct responses by geography class/no geography class in the right column, and male/female mean scores in the bottom row. Mean scores by both geography class and sex reveal means that are significantly different in favor of those students who have had a geography class and in favor of males. The central portion of the table reports means of the interaction effect between sex and geography class. The level of interaction effect between the independent variables was not significant.

---

Insert Table 2 about here
---

Table 3 reports means of the interaction effects between sex and geography class on students' ability to correctly locate countries. The table also reports the means of the correct responses by geography class and by sex in the right column and bottom row respectively. The differences between mean scores of correct responses by geography class and by sex are both significant in favor of those who have had a geography class in high school and in favor of males, while level of interaction effects between geography class and sex on ability to locate
countries is not significant.

Table 4 presents means of the interaction effects between sex and geography class with ability to locate cities. Again, the level of interaction between the two independent variables is not significant. However, the analysis of mean scores for correct responses by sex does indicate a difference in favor of males that is statistically significant.

Analysis of variance (ANOVA) results are presented in Tables 5, 6, and 7, for the dependent variables, water bodies, countries and cities respectively. In none of the three tables does the level of the effect between sex and geography class yield a value considered significant.
Conclusions

If 70 percent is regarded as a passing grade at the college/university level then the students in this study failed in their knowledge of locations of water bodies, countries, and cities. The highest mean correct response was 67 percent for locations of water bodies. The locations of countries was a distant second with a mean response rate of 40 percent. Locations of cities was the lowest of the three categories with a mean response of 32 percent. These scores are appallingly low.

The study indicates a statistically significant difference between those students who have had a geography class in high school and those who have not. However, the mean of correct responses of locations of water bodies for those who have had a geography class is 71 percent, barely a passing score. For those having had a geography class the mean scores for locating countries and cities is only 43 percent and 35 percent respectively. These are hardly scores in which we can take great pride.

Males did have an edge over females with males having significantly higher mean values in locating water bodies, countries and cities. However, once again, these mean value scores were not impressive. Scores on two of the three categories would have been considered failing.

It may not be crucial that an individual know the specific location of a water body, city, or country, but may we not draw a
corollary to suppose that this individual probably doesn't know much about the water bodies, countries, or cities in general. Ignorance of basic geography points toward a nonchalance regarding world affairs in general. And therein lies a serious problem for our nation.
References


<table>
<thead>
<tr>
<th>Category</th>
<th>$\bar{x}$ (%)</th>
<th>SD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water bodies</td>
<td>67</td>
<td>28</td>
</tr>
<tr>
<td>Countries</td>
<td>40</td>
<td>25</td>
</tr>
<tr>
<td>Cities</td>
<td>32</td>
<td>21</td>
</tr>
</tbody>
</table>

N = 660 students responding to each of three location categories.
Table 2

**Location of Water Bodies - Mean Values**

<table>
<thead>
<tr>
<th></th>
<th>MALE</th>
<th></th>
<th></th>
<th>FEMALE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>X(%)</td>
<td>SD(%)</td>
<td>N</td>
<td>X(%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Yes</strong></td>
<td>126</td>
<td>78</td>
<td>27</td>
<td>161</td>
<td>66</td>
</tr>
<tr>
<td><strong>No</strong></td>
<td>122</td>
<td>73</td>
<td>26</td>
<td>251</td>
<td>60</td>
</tr>
</tbody>
</table>

**Score/ water**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(By Geog.)</strong></td>
<td></td>
</tr>
<tr>
<td>X(%)</td>
<td>SD(%)</td>
</tr>
<tr>
<td>71**</td>
<td>28</td>
</tr>
</tbody>
</table>

| **Score/ water** |        |
| **(By sex)**     |        |
| X(%)             | SD(%)  |
| 76*              | 27     |
| 62*              | 27     |

*P<.001

**P<.05**
Table 3

Location of Countries - Mean Values

<table>
<thead>
<tr>
<th>Interaction Effects</th>
<th>Score/Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>High School Geography</td>
<td>MALE</td>
</tr>
<tr>
<td></td>
<td>X(%)</td>
</tr>
<tr>
<td>Yes</td>
<td>126</td>
</tr>
<tr>
<td>No</td>
<td>122</td>
</tr>
</tbody>
</table>

Score/Countries (By Sex)

| 50*                | 28    | 34    | 22 |

*P<.001  **P<.005
### Table 4

**Location of Cities - Mean Values**

<table>
<thead>
<tr>
<th></th>
<th>MALE</th>
<th></th>
<th></th>
<th>FEMALE</th>
<th></th>
<th></th>
<th>(By Geog.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>X(%)</td>
<td>SD(%)</td>
<td>N</td>
<td>X(%)</td>
<td>SD(%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Interaction Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>126</td>
<td>41</td>
<td>24</td>
<td>161</td>
<td>29</td>
<td>18</td>
<td>35</td>
</tr>
<tr>
<td>No</td>
<td>122</td>
<td>37</td>
<td>26</td>
<td>251</td>
<td>27</td>
<td>17</td>
<td>31</td>
</tr>
<tr>
<td><strong>Score/Cities</strong></td>
<td>39*</td>
<td>25</td>
<td>28</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(By Sex)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>*P&lt;.001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5

Analysis of Variance to Assess Effects of Sex and Geography Class on Knowledge of Locations of Water Bodies

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sum of Squares</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>1</td>
<td>23136.0</td>
<td>32.19</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>High School Geography</td>
<td>1</td>
<td>3618.5</td>
<td>5.03</td>
<td>&lt;.0252</td>
</tr>
<tr>
<td>Sex/Geography</td>
<td>1</td>
<td>58.8</td>
<td>0.08</td>
<td>&lt;.7750</td>
</tr>
<tr>
<td>Error</td>
<td>656</td>
<td>471462.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source</td>
<td>DF</td>
<td>Sum of Squares</td>
<td>F</td>
<td>P</td>
</tr>
<tr>
<td>-----------------</td>
<td>----</td>
<td>----------------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Sex</td>
<td>1</td>
<td>37983.2</td>
<td>66.33</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>High School Geography</td>
<td>1</td>
<td>2408.3</td>
<td>4.21</td>
<td>&lt;.0407</td>
</tr>
<tr>
<td>Sex/Geography</td>
<td>1</td>
<td>769.0</td>
<td>1.34</td>
<td>&lt;.2469</td>
</tr>
<tr>
<td>Error</td>
<td>656</td>
<td>375677.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 7

Analysis of Variance to Assess Effects of Sex and Geography Class on Knowledge of Locations of Cities

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sum of Squares</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>1</td>
<td>17663.1</td>
<td>42.53</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>High School Geography</td>
<td>1</td>
<td>1365.5</td>
<td>3.29</td>
<td>&lt;.0703</td>
</tr>
<tr>
<td>Sex/Geography</td>
<td>1</td>
<td>157.7</td>
<td>0.38</td>
<td>&lt;.5380</td>
</tr>
<tr>
<td>Error</td>
<td>656</td>
<td>272475.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX A

Geography Survey Response Sheet
GEOGRAPHY SURVEY

PART I. Please check the appropriate response to each question.

1. Year in School? ___ Freshman, ___ Sophomore, ___ Junior, ___ Senior
2. Sex? ___ Male, ___ Female
3. Have you had a geography course in high school? ___ Yes, ___ No
4. Have you had a geography course in college? ___ Yes, ___ No

PART II. Match each number on the map with the specific body of water, country, or city listed below. Numbers 1-10 on Map 1 are water areas, numbers 11-43 on Map 1 are countries, and numbers 44-76 on Map 2 are cities. Write the number before the correct response.

Water Bodies (numbers 1-10)

___ Indian Ocean
___ Bering Sea
___ Strait of Magellan
___ Mediterranean Sea
___ Atlantic Ocean
___ North Sea
___ Persian Gulf
___ Pacific Ocean
___ Coral Sea
___ Caribbean Sea

Countries (numbers 11-43)

___ East Germany
___ Brazil
___ Spain
___ Saudi Arabia
___ Poland
___ Yugoslavia
___ Mongolia
___ Turkey
___ Iran
___ Indonesia
___ Thailand
___ Vietnam
___ Syria
___ Afghanistan
___ People's Republic of China
___ Korea
___ New Zealand
___ Angola
___ Niger
___ Zaire
___ South Africa
___ Lesotho
___ Ethiopia
___ Libya
___ Egypt
___ Peru
___ Columbia
___ Canada
___ Honduras
___ Nicaragua
___ Costa Rica
___ Cuba
___ Iraq

Cities (numbers 44-76)

___ Chicago
___ Leningrad
___ Rome
___ Berlin
___ Moscow
___ Cairo
___ Damascus
___ Tehran
___ Beirut
___ Delhi
___ Phnom Penh
___ Ulanbattar
___ Beijing
___ Shanghai
___ Hong Kong
___ Manila
___ Kinshasa
___ Tripoli
___ Nairobi
___ Casablanca
___ Buenos Aires
___ Caracas
___ Lima
___ Montreal
___ Halifax
___ Winnipeg
___ San Salvador
___ Mexico City
___ Managua
___ Mecca
___ Rio De Janeiro
___ Christchurch
___ Melbourne
APPENDIX B

Map 1. Water Bodies and Countries
Map 1. Water Bodies and Countries
APPENDIX C

Map 2. Cities
APPENDIX D

Instructions for Administering Geography Survey
Instructions for Administering Geography Survey

1. Explain that this survey is measuring geographic locations of water bodies, countries, and cities around the world.

2. Each student should receive one answer sheet and two different maps. Map 1 has numbers on it which represent water bodies and countries. Map 2 has numbers which represent cities.

3. Please explain the procedures carefully.

Procedure 1.

Procedure 2.

Procedure 3.

Procedure 4.

Procedure 5.

Complete the demographic information at the top of the answer sheet. Do not place your name on this sheet.

Explain the maps and the answer sheet. Map 1 has a series of numbers which represent water bodies and countries. Numbers 1-10 on Map 1 are water bodies and numbers 11-43 are countries. The students are to write the number before the correct response on the answer sheet. (Example: Locate number 1 on Map 1. Number 1 is the Pacific Ocean. Students would write number 1 before Pacific Ocean on the answer sheet.) Map 2 has a series of numbers representing cities around the world and should be completed following the same procedures as on Map 1.

The student may separate the answer sheet from the maps to make it easier to complete the survey. Students can now begin taking the survey. This survey should take approximately 20 minutes to complete. More time can be given if needed.

When the students complete the survey, they are to turn in the answer sheet and both maps. We do not want these items out among students as several classes at differing time periods will be taking this survey.

Procedure 6.

Please turn the materials back to the individual who initially gave them to you.

THANK YOU FOR YOUR COOPERATION IN MAKING THIS STUDY POSSIBLE!

Robert W. Wood

Loraine Webster

Charles Eicher

27