

USING DATABASES IN THE SOCIAL STUDIES CLASSROOM

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The knowledge base in history and the social studies is increasing exponentially. For example, Bosnia-Herzegovina is usually thought of in the context of World War I. Yet with the dissolution of the Eastern European communist block and the disintegration of Yugoslavia, this region is headline news once again. New countries, new capitals, new leaders, and an ever growing array of data. This knowledge explosion necessitates that students learn to manipulate information and make sense out of that information.

Educational research supports the use of databases in problem-solving activities. The computer is useful as an organizational and memory storage device,¹ and aids people in problem-solving.²

Students, developing their own databases, can learn to segregate information into parts, classify information, develop observation and data acquisition skills, develop social skills in working together, and gain a sense of ownership that comes with mastery. These skills are important for history and social studies instructors to teach and students to learn.³

Students not only need to be able to manipulate data provided by commercial databases, but they need to understand the basic principles of collecting, categorizing, and sorting that data. Students can manipulate a database and get past the low-level factual gathering often done in history and social studies classes and deal with the high-order questions and responses related to analysis, synthesis, and evaluation. Each time the students resort or rearrange their data, they can identify new trends, clarify ideas, compare and contrast information, identify relationships involving correlations, make inferences from the data, test hypotheses, and draw conclusions.⁴ Each of these information age skills relates to

¹ E. R. Steinberg, A. B. Baskin, and E. Hofer, "Organizational/Memory Tools: A Technique for Improving Problem Solving Skills," *Journal of Educational Computing Research*, 2 (1986), 169-187.

² C. S. White, "Developing Information-Processing Skills Through Structured Activities with a Computerized File-Management Program," *Journal of Educational Computing Research*, 3 (1987), 355-375.

³ B. C. Yates and D. Moursund, "The Computer and Problem Solving," *The Computing Teacher*, 16 (1988), 12-16; R. P. Taylor, "Interview with Robert Taylor," in D. Kendall and H. Budin, "Computers for Intellectual Regeneration," *Social Education*, 51 (1987), 34-36.

⁴ J. Watson, *Teaching Thinking Skills with Databases* (Eugene, OR: International Council for Computers in Education, 1989).

the training that history and social studies teachers received and attempt to teach to their students.

A number of methods and activities can be used to help students acquire and develop critical thinking skills. For example, students can design their own database about American presidents. There already are such commercial databases available. However, students need to understand the amount of work, skill, and knowledge that goes into the preparation of databases. Thus, by having students create their own presidential databases, they come to understand the complexity of commercial databases. Indeed, students should learn to determine their own categories of information rather than always being led to preselected conclusions effected by the selection of data by others.

Headings for the presidential database fields might include information typically found in an encyclopedia: the number of the presidential administration, first name, last name, month of birth, day of birth, year of birth, town of birth, state of birth, college/university education, religion, occupation or profession, political party, age at inauguration, years served, month of death, day of death, year of death, age at death, town of burial, state of burial, election's runner-up, Vice-Presidents. This would seem like a great deal of information to work with, but at this point there are only 42 presidential administrations. Such a database would have 22 fields (columns) and 42 rows or 924 pieces of information to manipulate. Simply listing the presidents in numerical order would yield some information (Figure 1). However, sorting this amount of data by hand would be tedious, consume time, and dampen student motivation. The use of the computer counters those factors in that sorting this amount of data is easy, takes only seconds, and heightens motivation as students observe new patterns of data (Figures 2, 3, 4).

Although over-simplifying for the purpose of this article, we will use a database that contains some of the information that refers to the presidents of the United States: the number of the presidential administration, last name, state of birth, religious preference, and occupation (recognizing, of course, that some had more than one career field). The sheer bulk of the larger database forces us to use this smaller subset to indicate how the information can be used. When students sort data by various categories, different patterns of information are arrived at and hypotheses may be made that are inspired by the sorted data. For example, in Figures 2, 3, and 4 the data are sorted by occupations, religious affiliation, and birthplace state. This sorted data might produce some of the following hypotheses by students.

Figure 2 was sorted by occupations. Students rapidly note that a specific occupation is held by most presidents. They can hypothesize if there are any significant differences between the presidents' administrations who had the dominant occupation (lawyers) and the presidents' administrations who did not have that occupation. Students could then research the presidents who held other occupations. Students might wonder why so many presidents were lawyers. Is this a prerequisite for being president or did it just happen.

Figure 3 was sorted by religious affiliation. Students can correlate those religious identifiers with periods of time and should note that certain

denominations were in the majority during certain periods of time. The students might hypothesize that as the nation expanded and elected presidents from certain parts of the nation, religious identification also changed. Immigration and settlement patterns might be correlated to this information. In addition, is a religious preference important or necessary in order to be president? Nixon is listed as a Quaker, but he stated that he was not a practicing Quaker. Also, his presidential actions during the Vietnam War and Watergate scandal are not compatible with Quaker beliefs. How does religious preference affect a person's chance at becoming president? What impact, if any, does religious preference have on presidential actions?

Figure 4 was sorted by state of birth. Students might have some of the same hypotheses as for Figure 3, especially in terms of migration patterns. However, they might hypothesize that these states held large populations during those periods of time and contained more voters. Thus, do large populous states carry the presidential elections? How many large states are needed to win the presidency?

The whole process of rearranging the data is simplified by the computer since it allows the student to quickly reorder information into new and more revealing relationships than just the numerical order of presidential administrations. After using a small and simple data set as an instructional example in order to introduce the concepts of the use of databases, students can go on to larger databases. Larger and different databases can be developed, purchased, or accessed by students. With the advent of CD-Rom databases, students are already coming into contact with databases as card catalogues in libraries, multimedia presentations in classrooms, and even the parts departments of automobile dealerships. The ever-expanding use of databases in our society necessitates that students make some sense out of the mass of data available today.

History and social studies teachers can help students make sense of the growing amount of information by integrating computer databases into their classroom lessons. Once students have worked through a database unit, the teacher can hold discussions about the historical method and research methods. The students' concrete experiences with this simple database should motivate them to examine larger, more complex databases available in the social studies.

In conclusion, students may retain factual knowledge while learning the methods of history and social science. But more importantly, these methods can be taught while using the computer as a tool that allows us to access the expanding knowledge of the information age.

FIGURE 1
PRESIDENTS BY NUMBER

No	Last Name	Month Born	Birthplace State	Religion	Occupation	Age	Age
1	Washington	February	Virginia	Episcopalian	Planter	57	67
2	Adams, J	October	Massachusetts	Unitarian	Lawyer	61	90
3	Jefferson	April	Virginia	Unitarian	Planter & Lawyer	57	83
4	Madison	March	Virginia	Episcopalian	Lawyer	57	85
5	Monroe	April	Virginia	Episcopalian	Lawyer	58	73
6	Adams, JQ	July	Massachusetts	Unitarian	Lawyer	57	80
7	Jackson	March	South Carolina	Presbyterian	Lawyer	61	78
8	Van Buren	December	New York	Dutch Reformed	Lawyer	54	79
9	Harrison, WH	February	Virginia	Episcopalian	Soldier	68	68
10	Tyler	March	Virginia	Episcopalian	Lawyer	51	71
11	Polk	November	North Carolina	Methodist	Lawyer	49	53
12	Taylor	November	Virginia	Episcopalian	Soldier	64	65
13	Fillmore	January	New York	Unitarian	Lawyer	50	74
14	Pierce	November	New Hampshire	Episcopalian	Lawyer	48	64
15	Buchanan	April	Pennsylvania	Presbyterian	Lawyer	65	77
16	Lincoln	February	Kentucky	Presbyterian	Lawyer	52	56
17	Johnson, A	December	North Carolina	Methodist	Tailor	56	66
18	Grant	April	Ohio	Methodist	Soldier	46	63
19	Hayes	October	Ohio	Methodist	Lawyer	54	70
20	Garfield	November	Ohio	Disc. of Christ	Lawyer	49	49
21	Arthur	October	Vermont	Episcopalian	Lawyer	51	57
22	Cleveland	March	New Jersey	Presbyterian	Lawyer	47	71
23	Harrison, B	August	Ohio	Presbyterian	Lawyer	55	67
24	Cleveland	March	New Jersey	Presbyterian	Lawyer	55	71
25	McKinley	January	Ohio	Methodist	Lawyer	54	58
26	Roosevelt, TR	October	New York	Dutch Reformed	Author	42	60
27	Taft	September	Ohio	Unitarian	Lawyer	51	72
28	Wilson	December	Virginia	Presbyterian	Educator	56	67
29	Harding	November	Ohio	Baptist	Editor	55	57
30	Coolidge	July	Vermont	Congregational	Lawyer	51	60
31	Hoover	August	Iowa	Friend (Quaker)	Engineer	54	90
32	Roosevelt, FD	January	New York	Episcopalian	Lawyer	51	63
33	Truman	May	Missouri	Baptist	Businessman	60	88
34	Eisenhower	October	Texas	Presbyterian	Soldier	62	78
35	Kennedy	May	Massachusetts	Roman Catholic	Author	43	46
36	Johnson, LB	August	Texas	Disc. of Christ	Teacher	55	64
37	Nixon	January	California	Friend (Quaker)	Lawyer	56	
38	Ford	July	Nebraska	Episcopalian	Lawyer	61	
39	Carter	October	Georgia	Baptist	Businessman Farming	53	
40	Reagan	February	Illinois	Disc. of Christ	Actor	73	
41	Bush	June	Massachusetts	Episcopalian	Businessman	65	
42	Clinton	August	Arkansas	Baptist	Politician	46	

FIGURE 3
PRESIDENTS BY RELIGIOUS AFFILIATION

No	Last Name	Month Born	Birthplace State	Religion	Occupation	Age	Age
29	Harding	November	Ohio	Baptist	Editor	55	57
33	Truman	May	Missouri	Baptist	Businessman	60	88
39	Carter	October	Georgia	Baptist	Businessman Farming	53	
42	Clinton	August	Arkansas	Baptist	Politician	46	
30	Coolidge	July	Vermont	Congregational	Lawyer	51	60
20	Garfield	November	Ohio	Disc. of Christ	Lawyer	49	49
36	Johnson, LB	August	Texas	Disc. of Christ	Teacher	55	64
40	Reagan	February	Illinois	Disc. of Christ	Actor	73	
8	Van Buren	December	New York	Dutch Reformed	Lawyer	54	79
26	Roosevelt, TR	October	New York	Dutch Reformed	Author	42	60
1	Washington	February	Virginia	Episcopalian	Planter	57	67
4	Madison	March	Virginia	Episcopalian	Lawyer	57	85
5	Monroe	April	Virginia	Episcopalian	Lawyer	58	73
9	Harrison, WH	February	Virginia	Episcopalian	Soldier	68	68
10	Tyler	March	Virginia	Episcopalian	Lawyer	51	71
12	Taylor	November	Virginia	Episcopalian	Soldier	64	65
14	Pierce	November	New Hampshire	Episcopalian	Lawyer	48	64
21	Arthur	October	Vermont	Episcopalian	Lawyer	51	57
32	Roosevelt, FD	January	New York	Episcopalian	Lawyer	51	63
38	Ford	July	Nebraska	Episcopalian	Lawyer	61	
41	Bush	June	Massachusetts	Episcopalian	Businessman	65	
31	Hoover	August	Iowa	Friend (Quaker)	Engineer	54	90
37	Nixon	January	California	Friend (Quaker)	Lawyer	56	
11	Polk	November	North Carolina	Methodist	Lawyer	49	53
17	Johnson, A	December	North Carolina	Methodist	Tailor	56	66
18	Grant	April	Ohio	Methodist	Soldier	46	63
19	Hayes	October	Ohio	Methodist	Lawyer	54	70
25	McKinley	January	Ohio	Methodist	Lawyer	54	58
7	Jackson	March	South Carolina	Presbyterian	Lawyer	61	78
15	Buchanan	April	Pennsylvania	Presbyterian	Lawyer	65	77
16	Lincoln	February	Kentucky	Presbyterian	Lawyer	52	56
22	Cleveland	March	New Jersey	Presbyterian	Lawyer	47	71
23	Harrison, B	August	Ohio	Presbyterian	Lawyer	55	67
24	Cleveland	March	New Jersey	Presbyterian	Lawyer	55	71
28	Wilson	December	Virginia	Presbyterian	Educator	56	67
34	Eisenhower	October	Texas	Presbyterian	Soldier	62	78
35	Kennedy	May	Massachusetts	Roman Catholic	Author	43	46
2	Adams, J	October	Massachusetts	Unitarian	Lawyer	61	90
3	Jefferson	April	Virginia	Unitarian	Planter & Lawyer	57	83
6	Adams, JQ	July	Massachusetts	Unitarian	Lawyer	57	80
13	Fillmore	January	New York	Unitarian	Lawyer	50	74
27	Taft	September	Ohio	Unitarian	Lawyer	51	72

FIGURE 2
PRESIDENTS BY OCCUPATION

No	Last Name	Month Born	Birthplace State	Religion	Occupation	Age	Age
40	Reagan	February	Illinois	Disc. of Christ	Actor	73	
26	Roosevelt, TR	October	New York	Dutch Reformed	Author	42	60
35	Kennedy	May	Massachusetts	Roman Catholic	Author	43	46
33	Truman	May	Missouri	Baptist	Businessman	60	88
41	Bush	June	Massachusetts	Episcopalian	Businessman	65	
39	Carter	October	Georgia	Baptist	Businessman Farming	53	
29	Harding	November	Ohio	Baptist	Editor	55	57
28	Wilson	December	Virginia	Presbyterian	Educator	56	67
31	Hoover	August	Iowa	Friend (Quaker)	Engineer	54	90
2	Adams, J	October	Massachusetts	Unitarian	Lawyer	61	90
4	Madison	March	Virginia	Episcopalian	Lawyer	57	85
5	Monroe	April	Virginia	Episcopalian	Lawyer	58	73
6	Adams, JQ	July	Massachusetts	Unitarian	Lawyer	57	80
7	Jackson	March	South Carolina	Presbyterian	Lawyer	61	78
8	Van Buren	December	New York	Dutch Reformed	Lawyer	54	79
10	Tyler	March	Virginia	Episcopalian	Lawyer	51	71
11	Polk	November	North Carolina	Methodist	Lawyer	49	53
13	Fillmore	January	New York	Unitarian	Lawyer	50	74
14	Pierce	November	New Hampshire	Episcopalian	Lawyer	48	64
15	Buchanan	April	Pennsylvania	Presbyterian	Lawyer	65	77
16	Lincoln	February	Kentucky	Presbyterian	Lawyer	52	56
19	Hayes	October	Ohio	Methodist	Lawyer	54	70
20	Garfield	November	Ohio	Disc. of Christ	Lawyer	49	49
21	Arthur	October	Vermont	Episcopalian	Lawyer	51	57
22	Cleveland	March	New Jersey	Presbyterian	Lawyer	47	71
23	Harrison, B	August	Ohio	Presbyterian	Lawyer	55	67
24	Cleveland	March	New Jersey	Presbyterian	Lawyer	55	71
25	McKinley	January	Ohio	Methodist	Lawyer	54	58
27	Taft	September	Ohio	Unitarian	Lawyer	51	72
30	Coolidge	July	Vermont	Congregational	Lawyer	51	60
32	Roosevelt, FD	January	New York	Episcopalian	Lawyer	51	63
37	Nixon	January	California	Friend (Quaker)	Lawyer	56	
38	Ford	July	Nebraska	Episcopalian	Lawyer	61	
1	Washington	February	Virginia	Episcopalian	Planter	57	67
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42	Clinton	August	Arkansas	Baptist	Politician	46	
9	Harrison, WH	February	Virginia	Episcopalian	Soldier	68	68
12	Taylor	November	Virginia	Episcopalian	Soldier	64	65
18	Grant	April	Ohio	Methodist	Soldier	46	63
34	Eisenhower	October	Texas	Presbyterian	Soldier	62	78
17	Johnson, A	December	North Carolina	Methodist	Tailor	56	66
36	Johnson, LB	August	Texas	Disc. of Christ	Teacher	55	64

FIGURE 4
PRESIDENTS BY BIRTHPLACE STATE

No	Last Name	Month Born	Birthplace State	Religion	Occupation	Age	Age
42	Clinton	August	Arkansas	Baptist	Politician	46	
37	Nixon	January	California	Friend (Quaker)	Lawyer	56	
39	Carter	October	Georgia	Baptist	Businessman Farming	53	
40	Reagan	February	Illinois	Disc. of Christ	Actor	73	
31	Hoover	August	Iowa	Friend (Quaker)	Engineer	54	90
16	Lincoln	February	Kentucky	Presbyterian	Lawyer	52	56
2	Adams, J	October	Massachusetts	Unitarian	Lawyer	61	90
6	Adams, JQ	July	Massachusetts	Unitarian	Lawyer	57	80
35	Kennedy	May	Massachusetts	Roman Catholic	Author	43	46
41	Bush	June	Massachusetts	Episcopalian	Businessman	65	
33	Truman	May	Missouri	Baptist	Businessman	60	88
38	Ford	July	Nebraska	Episcopalian	Lawyer	61	
14	Pierce	November	New Hampshire	Episcopalian	Lawyer	48	64
22	Cleveland	March	New Jersey	Presbyterian	Lawyer	47	71
24	Cleveland	March	New Jersey	Presbyterian	Lawyer	55	71
8	Van Buren	December	New York	Dutch Reformed	Lawyer	54	79
13	Fillmore	January	New York	Unitarian	Lawyer	50	74
26	Roosevelt, TR	October	New York	Dutch Reformed	Author	42	60
32	Roosevelt, FD	January	New York	Episcopalian	Lawyer	51	63
11	Polk	November	North Carolina	Methodist	Lawyer	49	53
17	Johnson, A	December	North Carolina	Methodist	Tailor	56	66
18	Grant	April	Ohio	Methodist	Soldier	46	63
19	Hayes	October	Ohio	Methodist	Lawyer	54	70
20	Garfield	November	Ohio	Disc. of Christ	Lawyer	49	49
23	Harrison, B	August	Ohio	Presbyterian	Lawyer	55	67
25	McKinley	January	Ohio	Methodist	Lawyer	54	58
27	Taft	September	Ohio	Unitarian	Lawyer	51	72
29	Harding	November	Ohio	Baptist	Editor	55	57
15	Buchanan	April	Pennsylvania	Presbyterian	Lawyer	65	77
7	Jackson	March	South Carolina	Presbyterian	Lawyer	61	78
34	Eisenhower	October	Texas	Presbyterian	Soldier	62	78
36	Johnson, LB	August	Texas	Disc. of Christ	Teacher	55	64
21	Arthur	October	Vermont	Episcopalian	Lawyer	51	57
30	Coolidge	July	Vermont	Congregational	Lawyer	51	60
1	Washington	February	Virginia	Episcopalian	Planter	57	67
3	Jefferson	April	Virginia	Unitarian	Planter & Lawyer	57	83
4	Madison	March	Virginia	Episcopalian	Lawyer	57	85
5	Monroe	April	Virginia	Episcopalian	Lawyer	58	73
9	Harrison, WH	February	Virginia	Episcopalian	Soldier	68	68
10	Tyler	March	Virginia	Episcopalian	Lawyer	51	71
12	Taylor	November	Virginia	Episcopalian	Soldier	64	65
28	Wilson	December	Virginia	Presbyterian	Educator	56	67