



a joint project of Kent State University and
the Association of Research Libraries

Results of the Standardized Assessment of Information Literacy Skills (SAILS)

for

Utah State University

Fall, 2003

Analyzed and written by:



5840 Summit Street Sylvania, Ohio 43560

*The Institute of Museum and Library Services, a federal agency that fosters
innovation, leadership and a lifetime of learning, supports Project SAILS.*



Table of Contents

I.	EXECUTIVE SUMMARY	1
II.	INSTRUMENTATION AND EXAM ADMINISTRATION.....	2
III.	STUDENT PROFILE	5
IV.	STUDENT TEST PERFORMANCE	7
	1. Results by Standards.....	7
	2. Results by Skill Sets	8
V.	FIGURES	13
VI.	APPENDICES	28
	A. About Project SAILS	29
	B. Institutions Participating in Project SAILS	30
	C. Student Profiles for all Institutions	31
	D. Project SAILS Test Items.....	49
	E. ACRL Standards.....	80
	F. Project SAILS Skill Sets	90

I. EXECUTIVE SUMMARY

The Fall 2003 administration of a web-based version of SAILS resulted in 172 useable responses. Results are reported at two levels of specificity: 1) by standards; and 2) by skill sets. In each case, an average student performance is described and trends in performance are identified. Additionally, each skill set is analyzed separately by student sex, ethnicity, class standing, G.P.A, and major field of study. These additional analyses were performed only in cases where there were large enough sample sizes.

All results use the average student response as a reference point. This reference point was calculated based on the combined analysis of the SAILS test scores from all participating institutions and is updated as new institutions are entered into the pool. The average student response was also calculated for each individual institution for comparison and is updated as new institutions are entered into the pool. The test items above the average line are then interpreted as more difficult, whereas the test items below the average line are interpreted easier for the average student to get right.

In summary, the results of the student performance by standards shown in Figures 1-4 suggest that students at Utah State University performed at a somewhat higher level than the average student across all participating institutions and that the test was fairly easy for them. On the average, students at Utah State University are likely to answer correctly 64.5% of the items on Standard I, 75% on Standard III, and 80% on Standard V. The most difficult Standard for students at Utah State University is likely to be Standard II on which the average student is likely to answer correctly less than half of the items (41.3%). No inferences can be made about Utah student performance on the test items they did not take.

The results of the student performance by skill sets showed that students at Utah State University, regardless of the group, performed on most Skill Sets higher than the average student across all participating institutions. The exception is Skill Sets 5, 8 and 11, on which Utah students overall as well as all the analyzed subgroups performed on average at the same level as the students across all institutions. Skill Set 11 is also the most difficult skill set on the entire test for the average student at Utah State University. Utah students are likely to find most of the items from this skill set difficult (86%). The other skill sets range from moderately easy to quite easy for the average student at Utah State University. On the average, students at Utah State University are likely to answer correctly 57-87% of the items from Skill Set 2, 72% of the items from Skill Set 3, 83% of the items from Skill Set 4, 49-61% of the items from Skill Set 6, 69% of the items from Skill Set 7, 65-88% of the items from Skill Set 9, 61% of the items from Skill Set 10, and 82% of the items from Skill Set 12.

II. INSTRUMENTATION AND EXAM ADMINISTRATION

The SAILS item bank consisted of 130 items, combining both multiple-choice items (items requiring a single response) and multiple response items (items requiring multiple responses). Each item was scored dichotomously (right/wrong). For the multiple-choice items, the correct answer was scored as “1”, and the incorrect answer was scored as “0”. For the multiple response items, each response was scored separately. Responses were scored as “1” if they were correctly checked or correctly not checked. Responses were scored as “0” if they were incorrectly checked or incorrectly not checked.

Item administration at Utah State University consisted of each student responding to a different set of items, with some common items shared across the individual forms. The total number of items taken by students was 126, with each students attempting from 45 to 86 items. The items spanned all four standards and skill sets targeted by the test. All the students took the test under unmonitored conditions.

Table 1 summarizes the distribution of the test items administered to Utah students, grouped by 4 standards. Table 2 shows the distribution of the taken items within 12 skill sets. Students at Utah State University took almost all the items from each standard and all the items from all skill sets. The items not taken by the student at Utah State University did not represent distinctive skills and, therefore, did not affect the analysis at the skill level.

Table 1. Subscales of the Test by Standard

Standard I	The information literate student determines the nature and extent of the information needed 62 items: 5, 9, 10 , 11, 17, 20, 23, 26, 27, 30, 33, 35, 38, 43, 46, 48a-48e, 50a-50e, 54, 63, 64, 68, 69a-69e, 73, 76a-76e, 84a-84e, 93, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 121a-121e
Standard II	The information literate student accessed needed information effectively and efficiently 92 items: 1, 2a-2h, 3, 4, 7, 8, 12a-12e , 14, 15a-15g, 16, 18a-18f, 19, 21, 22, 24, 25, 29, 32, 34, 36, 39, 40, 42, 44, 49, 51, 53, 54, 55a-55e, 56, 57a-57e, 58a-58e, 59, 60, 61, 62, 67a-67e , 71, 73, 88, 89, 90, 94, 107a-107e, 109, 110, 111, 125, 126, 127, 128, 129, 138, 139, 140, 141, 142, 143, 144, 145
Standard III	The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system 20 items: 18a-18f, 28 , 38, 65, 77a-77e, 83, 85, 86, 87, 91, 92, 124
Standard V	The information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally 49 items: 75a-75e, 80a-80e, 81a-81e, 112, 113a-113e, 114a-114e, 115, 116a-116e, 117, 118, 119, 120, 122, 123, 130, 131a-131e, 132, 133, 134, 135, 137

Note: Items in green were not taken at Utah State University.

Table 2. *Subscales of the Test by Skill Sets*

Skill Set 1	Developing a Topic 2 items: 33, 95
Skill Set 2	Scholarly Communication/Structure of Disciplines 23 items: 38, 46, 63, 69a-69e, 76a-76e, 84a-84e, 121a-121e
Skill Set 3	Identifying and Distinguishing Among Types of Sources 25 items: 11, 17, 35, 48a-48e, 50a-50e, 96, 97, 98, 99, 100, 101, 102, 125, 126, 127, 128, 129
Skill Set 4	Selecting Finding Tools 36 items: 1, 3, 18a-18f, 19, 22, 38, 55a-55e, 57a-57e, 64, 73, 77a-77e, 94, 139, 140, 141, 142, 143, 144, 145
Skill Set 5	Selecting Search Terms 4 items: 4, 16, 43, 53
Skill Set 6	Constructing the Search 23 items: 7, 8, 14, 15a-15g, 21, 24, 32, 39, 56, 59, 61, 107a-107e, 108
Skill Set 7	Database Mechanics 13 items: 42, 58a-58e, 62, 71, 73, 89, 109, 110, 111
Skill Set 8	Evaluating and Revising Search Results 2 items: 88, 90
Skill Set 9	Retrieving Sources 17 items: 2a-2h, 25, 29, 30, 68, 93, 103, 104, 105, 106

Skill Set 10	<p>Evaluating and Selecting Sources</p> <p>23 items: 5, 9, 18a-18f, 20, 23, 26, 27, 54, 59, 65, 83, 85, 86, 87, 91, 92, 124, 138</p>
Skill Set 11	<p>Documenting Sources</p> <p>7 items: 34, 40, 44, 49, 51, 60, 123</p>
Skill Set 12	<p>Economic, Legal, and Social Issues</p> <p>49 items: 75a-75e, 80a-80e, 81a-81e, 112, 113a-113e, 114a-114e, 115, 116a-116e, 117, 118, 119, 120, 122, 130, 131a-131e, 132, 133, 134, 135, 136, 137</p>

Note: Items in green were not taken at Utah State University.

III. STUDENT PROFILE

Table 3 contains the demographic data of 172 students who took the SAILS test in Fall 2003 at Utah State University. The data show that the sample is characterized by a low representation of minority students (4.2%). The majority of the students who took the test were white, females, and had G.P.A. between 2.5 and 3.0 (73.7%). Student representation by majors in the sample was too small and therefore not included in the table.

Table 3. Demographic Characteristics of Students (N=172)

Characteristic	n	%
Sex		
Male	80	47.3
Female	89	52.7
Ethnicity		
Unknown	3	1.8
African-American	0	0.0
American Indian	1	0.6
Hispanic	4	2.4
Non-resident Alien	12	7.1
Pacific Islander	2	1.2
White	147	87.0
Class Standing		
Freshman	20	12.9
Sophomore	42	27.1
Junior	54	34.8
Senior	39	25.2
Student G.P.A.		
≤ 1.5	29	17.4
1.51-2.00	3	1.8
2.01-2.50	12	7.2
2.51-3.00	25	15.0
3.01-3.50	31	18.6
3.51-4.00	67	40.1

The demographic profile of test takers at Utah State University was similar to the demographic profile of students across all institutions that participated in SAILS in Spring and Fall 2003. This allowed for establishing a meaningful reference point – the across-institutional average - that was used for all the analyses of student performance at a given institution.

The demographic profile of test takers at Utah State University was very similar to the demographic profile of students across all institutions that participated in SAILS in Spring and Fall 2003 with regard to student distribution by gender and G.P.A. Table 4 summarizes demographic data of the respondents at 18 different campuses and shows that the majority of the students across institutions were also females and had a G.P.A. between 2.5 and 3.0. However, the sample at Utah State University had fewer freshmen compared to their proportional representation in the total pool of test takers.

Table 4. Demographic Characteristics of Students Across 18 Campuses (N=5798)

Characteristic	n	%
Sex		
Male	2107	39.7
Female	3206	60.3
Ethnicity		
Unknown	211	4.4
African-American	302	6.2
American Indian	23	0.5
Hispanic	136	2.8
Non-resident Alien	32	0.7
Pacific Islander	167	3.4
White	3970	82.0
Class Standing		
Freshman	3290	61.9
Sophomore	863	16.2
Junior	585	11.0
Senior	521	9.8
Other	54	1.0
Student G.P.A.		
≤ 1.5	462	9.1
1.51-2.00	503	9.9
2.01-2.50	720	14.2
2.51-3.00	1382	27.3
3.01-3.50	976	19.3
3.51-4.00	1020	20.1

See Appendix B and Appendix C for a list of all participants and their respective student profiles.

IV. STUDENT TEST PERFORMANCE

Student test performance by standards and skill sets is organized into graphs (see Figure 1 for an example) that were created using transformed student test scores and item difficulties. These transformed scores and item difficulties were obtained through the analysis of the test data via the Rasch dichotomous model (1960¹, 1980²) that allowed for re-scaling the ordinal-level item responses to an interval-level scale and legitimated the calculation of student average responses.

Graphs that summarize student performance by standards contain two different reference lines – one to locate an average student across all participating institutions, the other to mark an average student at Utah State University. Graphs that depict student performance by skill sets contain two or more reference lines. One of the lines represents an average student across all participating intuitions. All other lines mark an average student within a particular group at Utah State University, such as sex, ethnicity, class standing, and G.P.A.

Each line should be interpreted as a 50/50 chance of the average student’s correctly answering any item found at the same level. Items above the average line are likely to be answered incorrectly by the average respondent, whereas items below the line are likely to be answered correctly by the average respondent. The farther above the line an item is placed, the more difficult it is. The farther below the item is placed, the easier it is.

Student Performance by Standards

First, student test scores were analyzed at the level of standards (see Table 1 for location of the individual test items within each standard).

Figure 1 depicts the performance of an average student on 63 items that belong to Standard I. Utah students were administered 62 of these items. The item that was not taken by students at Utah State University is highlighted in green. Since there is no established hierarchical relationship among the 63 items of Standard I, no meaningful predictions could be made for Utah students with regard their performance on this item.

Overall, Figure 1 shows that on the average students at Utah State University performed at a somewhat higher level than students across all participating institutions suggesting that students at Utah State University compared to the across institutional average are likely to have a higher probability of answering correctly eight items located between the two average lines. Figure 1 also shows that 64.5% of the items on Standard I are located below the Utah average line indicating that on average Utah students are more likely to find these items easy than difficult. The easiest items are likely to be items 121b, 121d, and 121e. These items are located the farthest below the average line for Utah students. The most difficult items from Standard I are likely to be items 54, 73, 38, and 23, located the farthest above the average line for Utah students. Overall, the mean for the students is higher than the mean for the items suggesting that on the average Standard I was fairly easy for students at Utah State University.

Figure 2 depicts the performance of an average student on 102 items that belong to Standard II. Utah students were administered 92 (90.2%) of these items. The items that were not taken by students at Utah State University are highlighted in green. Since there is no established hierarchical relationship among the 102 items of Standard II, no meaningful predictions could be made for Utah students with regard their performance on these items.

Overall, Figure 2 shows that on the average students at Utah State University performed at a slightly higher level than students across all participating institutions suggesting that students at Utah State University compared to the across institutional average are likely to have a slightly higher probability of answering correctly five items located between the two average lines. Figure 2 also shows that 38 items (41.3%) on Standard II are located below the line

¹ Rasch, G. (1960). *Probabilistic models for some intelligence and attainment tests*. Copenhagen: Danmarks Paedagogiske Institut.

² Rasch, G. (1980). *Probabilistic models for some intelligence and attainment tests* (Expanded ed.). Chicago: University of Chicago Press.

that marks the performance of the average student at Utah State University and are therefore likely to be easy for them. More than a half of the items (68.7%) from Standard II taken by students at Utah State University are located above the Utah average line. These items are likely to be difficult for an average student at this institution. On the average, students at Utah State University are likely to have the highest probability of answering correctly items 107d and 107e. These items are the easiest for the average student at this institution and are located the farthest below the average line for Utah students. The probability is the lowest for the most difficult items that include items 125, 126, and 127 located the farthest above the average line for Utah students. Overall, however, the mean for the students is slightly higher than the mean for the items suggesting that based on the items taken, Standard II was of average difficulty for students at Utah State University.

Figure 3 depicts the performance of an average student on 21 items that belong to Standard III. Utah students were administered 20 (95%) of these items. The item that was not taken by students at Utah State University was item 28. It is highlighted in green. Since there is no established hierarchical relationship among the 21 items of Standard III, no meaningful predictions could be made for Utah students with regard their performance on this item.

Overall, Figure 3 shows that on the average students at Utah State University performed at a slightly higher level than students across all participating institutions suggesting that students at Utah State University compared to the across institutional average are likely to have a higher probability of answering correctly item 124 located between the two average lines. Figure 3 also shows that 75% of the items on Standard III are located below the Utah average line indicating that on average Utah students are more likely to find these items easy than difficult. The easiest item is likely to be item 18c. This item is located the farthest below the average line for Utah students. The most difficult items from Standard III are likely to be items 38, 65, and 87, located the farthest above the average line for Utah students. Overall, the mean for the students is higher than the mean for the items suggesting that on the average Standard III was fairly easy for students at Utah State University.

Figure 4 depicts the performance of an average student on 49 items that belong to Standard V. Utah students were administered all these items. Overall, Figure 4 shows that on the average students at Utah State University performed at a higher level than the average student across all the participating institutions suggesting that students at Utah State University compared to the across institutional average are likely to have a higher probability of answering correctly 13 located between the two average lines. Figure 4 also shows that almost 80% of the items on Standard V are located below the Utah average line indicating that on average Utah students are more likely to find these items easy than difficult. The easiest items are likely to be items 113c, 113d, 114a, 114c, 116b, 116c, 131a, 131d, 81e, 80a, 81d, and 81b located the farthest below the average line for Utah students. The most difficult items from Standard V are likely to be items 120 and 123 located the farthest above the average line for Utah students. Overall, the mean for the students is higher than the mean for the items suggesting that on the average Standard V was fairly easy for students at Utah State University.

In summary, the results of the student performance by standards shown in Figures 1-4 suggest that students at Utah State University performed at a somewhat higher level than the average student across all participating institutions and that the test was fairly easy for them. On the average, students Utah are likely to answer correctly 64.5% of the items on Standard I, 75% on Standard III, and 80% on Standard V. The most difficult Standard for students at Utah State University is likely to be Standard II on which the average student is likely to answer correctly less than half of the items (41.3%). No inferences can be made about Utah student performance on the test items they did not take.

Student Performance by Skill Sets

Analyses of SAILS test scores by skill sets (see Table 3 for location of the individual test items within each skill set) include the analysis of student performance overall and the analyses of student performance broken down by student sex, ethnicity, class standing, and G.P.A. The analyses were performed for 8 groups including both sex groups, one ethnic group –Whites, two G.P.A. groups – 3.0-3.5 and 3.5-4.0, and sophomores, juniors and seniors. Sample sizes for other subgroups were too small. Utah students took all the items from all skill sets.

Skill Set 1. Developing a Topic

Student test performance on this Skill Set could not be analyzed because the amount of missing data on the two skill set items yielded unstable and hence uninterpretable results for this skill set.

Skill Set 2. Scholarly Communication/Structure of Disciplines

Figure 5 depicts the performance of an average student on 23 items that define Skill Set 2 “***Scholarly Communication/Structure of Disciplines.***”

Figure 5 shows that the average test performance on this skill set by Utah students is higher than the average performance of students across all participating institutions, suggesting that overall students at Utah State University compared to the across institutional average are likely to have a higher probability of answering correctly the items located between the average lines. More specifically, Utah students overall are likely to find items 76e, 84b, 84c, 121c, 69b, 69c, and 76c easier than the average student across all institutions. This also applies to Utah juniors whose average performance was the same as the average performance of students at Utah State University overall. White and senior students at Utah State University performed on average slightly lower than the Utah students overall and are likely to find items 76e, 84b, and 84c slightly more difficult. Furthermore, Utah females and students with G.P.A. higher than 3.0 are likely to find items 121c, 69b, 69c, and 76c more difficult than white and senior Utah students. Overall, Utah male students performed on average higher than any other groups. However, there are no items between the average line for this group and the other groups to describe the nature of this difference. Utah sophomores performed on average at the same level as the average student across all participating institutions. Other groups could not be analyzed because of the very small sample sizes.

Overall, the easiest items on Skill Set 2 for students at Utah State University are likely to be items 76a, 76b, and 76d located the farthest below the average line for this institution. The most difficult are likely to be items 121a, 38, and 46 located the farthest above the Utah average line. Overall, the average student at Utah State University is likely to find Skill Set 2 fairly easy as depending on the group from 57 to 87% of the items from this skill set are below the Utah average performance across different subgroups.

Skill Set 3. Identifying and Distinguishing Among Types of Sources

Figure 6 depicts the performance of an average student on 25 items that define Skill Set 3 “***Identifying and Distinguishing Among Types of Sources.***”

Figure 6 shows that the average test performance on this skill set by Utah students is higher than the average performance of students across all participating institutions, suggesting that students at Utah State University compared to the across institutional average are likely to have a higher probability of answering correctly the items located between the average lines. More specifically, Utah students are likely to find items 35 and 96 easier than the average student in general. This applies to Utah students overall, males, females, whites, sophomores, juniors, seniors and students with G.P.A. higher than 3.0. The average performance of these subgroups was the same. Other groups could not be analyzed because of the very small sample sizes.

Overall, the easiest items on Skill Set 3 for students at Utah State University are likely to be items 50d, 50e, 50c, 50b, and 48e located the farthest below the average line for this institution. The most difficult are likely to be items 125, 126 and 127 located the farthest above the Utah average line. Overall, the average student at Utah State University is likely to find Skill Set 3 fairly easy 72% of the items from this skill set are below the Utah average performance.

Skill Set 4. Selecting Finding Tools

Figure 7 depicts the performance of an average student on 36 items that define Skill Set 4 “***Selecting Finding Tools.***”

Figure 7 shows that the average test performance on this skill set by Utah students is higher than the average performance of students across all participating institutions, suggesting that students at Utah State University compared to the across institutional average are likely to have a higher probability of answering correctly the items located between the average lines. More specifically, Utah students are likely to find items 94, 142, 144, 55d, 143, 57c, 57e, 140, 145, 55c, 141, 77d, 22, 55b, 55e, 77c, and 77e easier than the average student in general. This applies to Utah students overall, males, females, whites, sophomores, juniors, and seniors, and students with G.P.A. > 3.0. The average performance of these subgroups was the same. Other groups could not be analyzed because of the very small sample sizes.

Overall, the easiest items on Skill Set 4 for students at Utah State University are likely to be items 18c, 18f, and 18b located the farthest below the average line for this institution. The most difficult are likely to be items 38 and 73 located the farthest above the Utah average line. Overall, the average student at Utah State University is likely to find Skill Set 4 fairly easy 83% of the items from this skill set are below the Utah average performance.

Skill Set 5. Selecting Search Terms

Figure 8 depicts the performance of an average student on 4 items that define Skill Set 5 “***Selecting Search Terms.***”

Figure 8 shows that the average test performance on this skill set by Utah students is the same as the average performance of students across all participating institutions. This applies to Utah students overall, males, females, whites, sophomores and seniors, and students with G.P.A. 3.0 or higher. The average performance of these subgroups was the same. Utah juniors performed slightly higher than the other groups. However, there are no items between the average line for this group and the other groups to describe the nature of this difference. Other groups could not be analyzed because of the very small sample sizes.

Overall, the items on Skill Set 5 are evenly split between easy and difficult. Items 53 and 16 are likely to be difficult for the average student at Utah State University as they located above the Utah average line. Items 4 and 143 are likely to be easy for the average student at Utah State University as they located above the Utah average line.

Skill Set 6. Constructing the Search

Figure 9 depicts the performance of an average student on 23 items that define Skill Set 6 “***Constructing the Search.***”

Figure 9 shows that the average test performance on this skill set by Utah students is higher than the average performance of students across all participating institutions, suggesting that students at Utah State University compared to the across institutional average are likely to have a higher probability of answering correctly the items located between the average lines. More specifically, Utah students are likely to find items 14, 15d, 21, 59, and 15a easier than the average student in general. This applies to Utah students overall, males, females, juniors, seniors and students with G.P.A. 3.0-4.0. The average performance of these subgroups was the same. Utah white and sophomore students are likely to find items 14, 15d, and 21 more challenging than the other groups at Utah State University. Other groups could not be analyzed because of the very small sample sizes.

Overall, the easiest items on Skill Set 6 for students at Utah State University are likely to be items 107d, 107e, and 7 located the farthest below the average line for this institution. The most difficult are likely to be items 108, 24, and 39 located the farthest above the Utah average line. Overall, the average student at Utah State University is likely to find Skill Set 6 moderately easy as depending on the group from 49 to 61% of the items from this skill set are below the Utah average performance.

Skill Set 7. Database Mechanics

Figure 10 depicts the performance of an average student on 13 items that define Skill Set 7 “***Database Mechanics.***”

Figure 10 shows that the average test performance on this skill set by Utah students is higher than the average performance of students across all participating institutions, suggesting that students at Utah State University

compared to the across institutional average are likely to have a higher probability of answering correctly the items located between the average lines. More specifically, Utah students are likely to find items 58b, 58c, and 58d easier than the average student in general. This applies to Utah students overall, males, females, whites, sophomores, juniors, seniors, and students with G.P.A. 3.0-4.0. The average performance of these subgroups was the same. Other groups could not be analyzed because of the very small sample sizes.

Overall, the easiest items on Skill Set 7 for students at Utah State University are likely to be items 110 and 62 located the farthest below the average line for this institution. The most difficult is likely to be item 73 located the farthest above the Utah average line. Overall, the average student at Utah State University is likely to find Skill Set 7 moderately easy as 69% of the items from this skill set are below the Utah average performance.

Skill Set 8. Evaluating and Revising Search Results

Figure 11 depicts the performance of an average student on 4 items that define Skill Set 5 “***Evaluating and Revising Search Results.***”

Figure 11 shows that the average test performance on this skill set by Utah students is the same as the average performance of students across all participating institutions. This applies to Utah students overall, males, females, whites, sophomores, juniors, and students with G.P.A. 3.5-4.0. The average performance of these subgroups was the same. Utah seniors and students with G.P.A. 3.0-3.5 performed on average somewhat higher than the other mentioned groups. However, there are no items to describe the nature of the difference in performance. Other groups could not be analyzed because of the very small sample sizes. Overall, since there are only two items in this Skill Set, on the average, item 88 is likely to be difficult for the students at Utah State University and overall as it is located above the average lines while item 90 is likely to be easy for the students at Utah State University and overall as it is located below the average lines.

Skill Set 9. Retrieving Sources

Figure 12 depicts the performance of an average student on 17 items that define Skill Set 9 “***Retrieving Sources.***”

Figure 12 shows that the average test performance on this skill set by Utah students is higher than the average performance of students across all participating institutions, suggesting that students at Utah State University compared to the across institutional average are likely to have a higher probability of answering correctly the items located between the average lines. More specifically, Utah students are likely to find items 29 and 2c easier than the average student in general. This applies to Utah students overall, whites, juniors, seniors, and students with G.P.A. 3.5-4.0. The average performance of these subgroups was the same. Utah males and students with G.P.A. 3.0-4.5 are likely to find the same two items a little more challenging than the other groups. Finally, Utah females and sophomores performed on average higher than any other groups. Utah females and sophomores are likely to find items 104 and 2g a little easier than other students at Utah State University. Other groups could not be analyzed because of the very small sample sizes.

Overall, the easiest items on Skill Set 9 for students at Utah State University are likely to be items 2a, 2b, and 68 located the farthest below the average line for this institution. The most difficult is likely to be item 83 located the farthest above the Utah average line. Overall, the average student at Utah State University is likely to find Skill Set 9 fairly easy as depending on the group from 65 to 88% of the items from this skill set are below the Utah average performance.

Skill Set 10. Evaluating and Selecting Sources

Figure 13 depicts the performance of an average student on 23 items that define Skill Set 10 “***Evaluating and Selecting Sources.***”

Figure 13 shows that the average test performance on this skill set by Utah students is slightly higher than the average performance of students across all participating institutions. However, there are no items between the two average lines to describe the nature of this difference in performance. This applies to Utah students overall, males,

females, whites, sophomores, juniors, seniors, and students with G.P.A. 3.0-4.0. The average performance of these subgroups was the same. Other groups could not be analyzed because of the very small sample sizes.

Overall, the easiest items on Skill Set 10 for students at Utah State University are likely to be items 18c, 18f, and 18b located the farthest below the average line for this institution. The most difficult is likely to be item 65 located the farthest above the Utah average line. Overall, the average student at Utah State University is likely to find Skill Set 10 moderately easy as 61% of the items from this skill set are below the Utah average performance.

Skill Set 11. Documenting Sources

Figure 14 depicts the performance of an average student on 7 items that define Skill Set 11 “***Documenting Sources.***”

Figure 14 shows that the average test performance on this skill set by Utah students is about the same as the average performance of students across all participating institutions. This applies to Utah students overall, males, females, whites, sophomores, juniors, seniors, and students with G.P.A. 3.0-4.0. The average performance of these subgroups was the same. Other groups could not be analyzed because of the very small sample sizes.

Overall, the easiest item on Skill Set 11 for students at Utah State University is likely to be item 34 located the farthest below the average line for this institution. The most difficult are likely to be items 123, 60, 49, and 44 located the farthest above the Utah average line. Overall, the average student at Utah State University is likely to find Skill Set 11 difficult as 86% of the items from this skill set are above the Utah average performance.

Skill Set 12. Economic, Legal, and Social Issues

Figure 15 depicts the performance of an average student on 49 items that define Skill Set 12 “***Documenting Sources.***”

Figure 15 shows that the average test performance on this skill set by Utah students is higher than the average performance of students across all participating institutions, suggesting that students at Utah State University compared to the across institutional average are likely to have a slightly higher probability of answering correctly the items located between the average lines. More specifically, Utah students are likely to find items 75c, 113e, 117, 122, 134, 118, 81a, and 81c easier than the average student in general. This applies to Utah students overall, males, females, whites, sophomores, juniors, seniors, and students with G.P.A. 3.0-4.0. The average performance of these subgroups was the same. Other groups could not be analyzed because of the very small sample sizes.

Overall, the easiest items on Skill Set 12 for students at Utah State University are likely to be items 116b, 116c, 113c, 113d, 114a, 114c, 131a, and 131d located the farthest below the average line for this institution. The most difficult is likely to be item 120 located the farthest above the Utah average line. Overall, the average student at Utah State University is likely to find Skill Set 12 easy as 82% of the items from this skill set are below the Utah average performance.

In summary, students at Utah State University, regardless of the group, performed on most Skill Sets higher than the average student across all participating institutions. The exception is Skill Sets 5, 8 and 11, on which Utah students overall as well as all the analyzed subgroups performed on average at the same level as the students across all institutions. Skill Set 11 is also the most difficult skill set on the entire test for the average student at Utah State University. Utah students are likely to find most of the items from this skill set difficult (86%). The other skill sets range from moderately easy to quite easy for the average student at Utah State University. On the average, students at Utah State University are likely to answer correctly 57-87% of the items from Skill Set 2, 72% of the items from Skill Set 3, 83% of the items from Skill Set 4, 49-61% of the items from Skill Set 6, 69% of the items from Skill Set 7, 65-88% of the items from Skill Set 9, 61% of the items from Skill Set 10, and 82% of the items from Skill Set 12.

Figure 2. Student Performance by Standard II

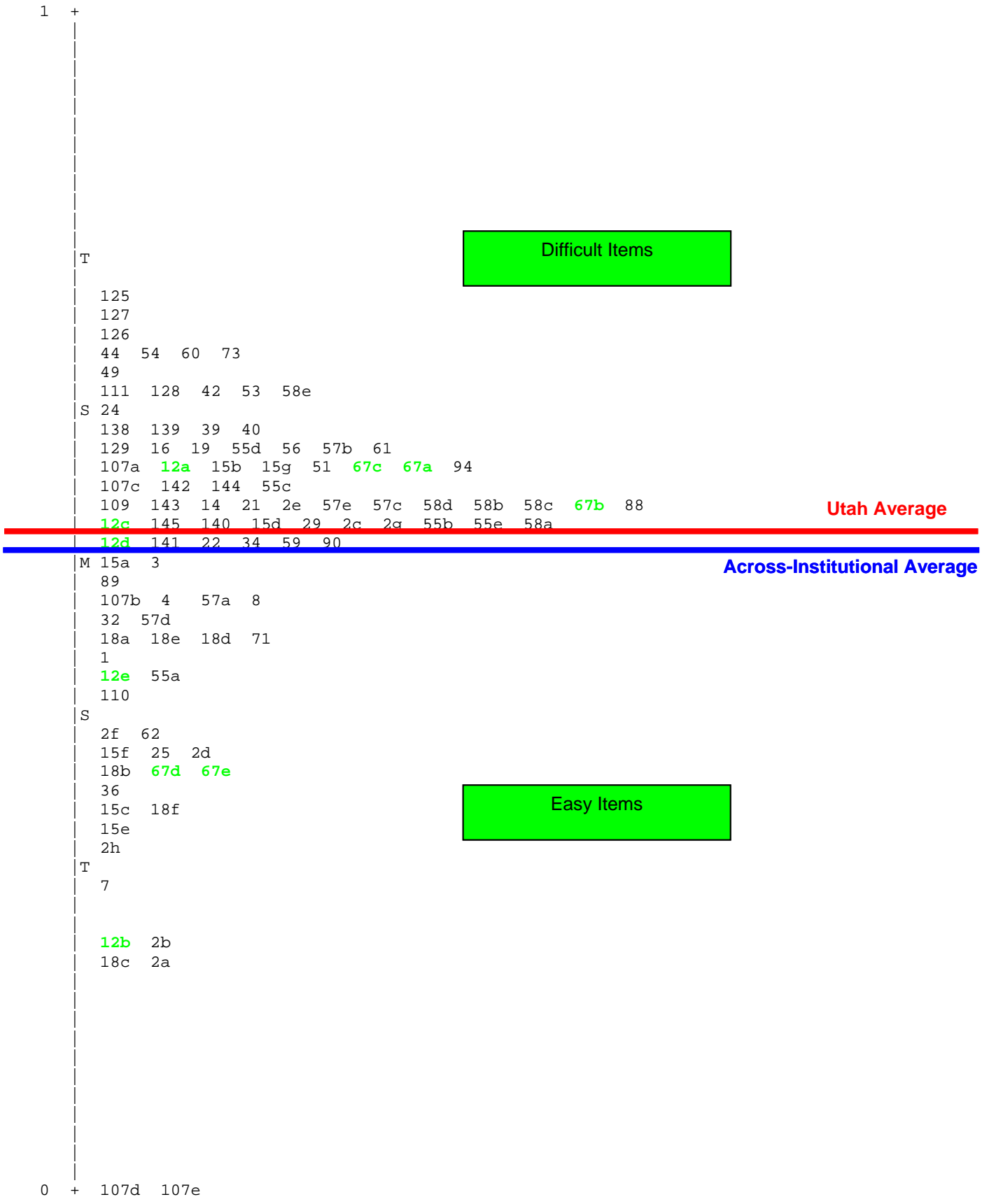


Figure 3. Student Performance by Standard III

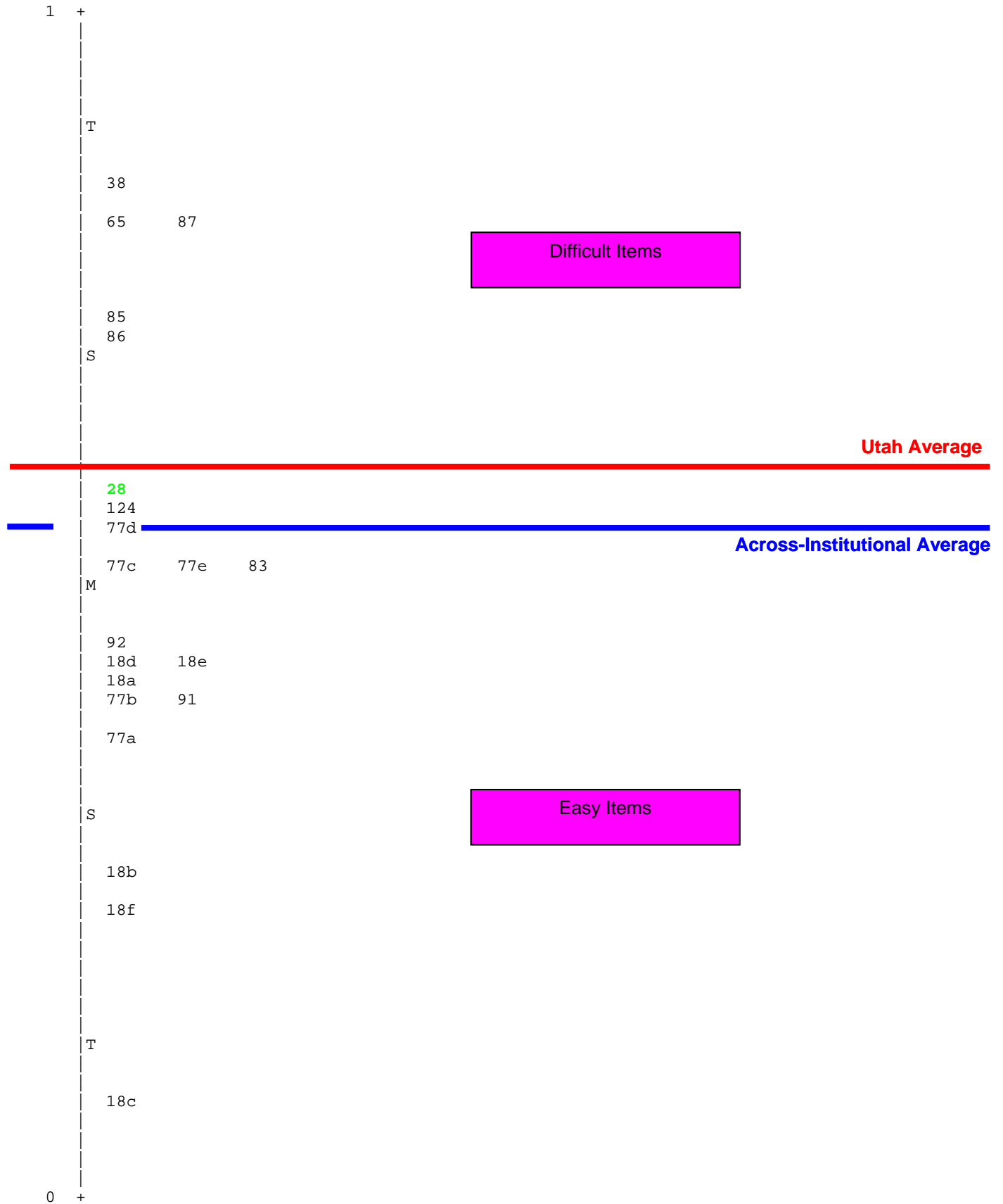


Figure 4. Student Performance by Standard V

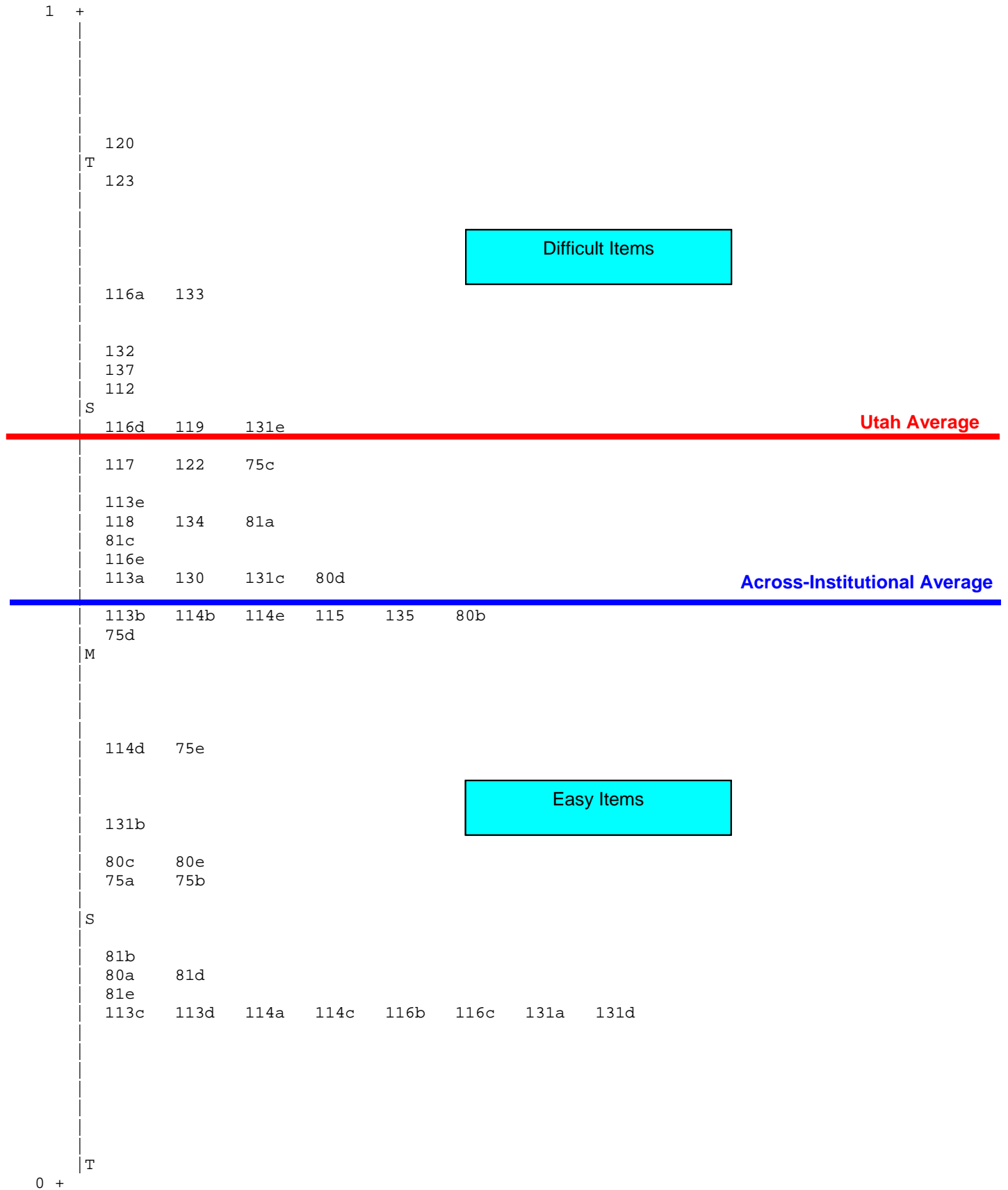


Figure 5. Student Performance on Skill Set 2

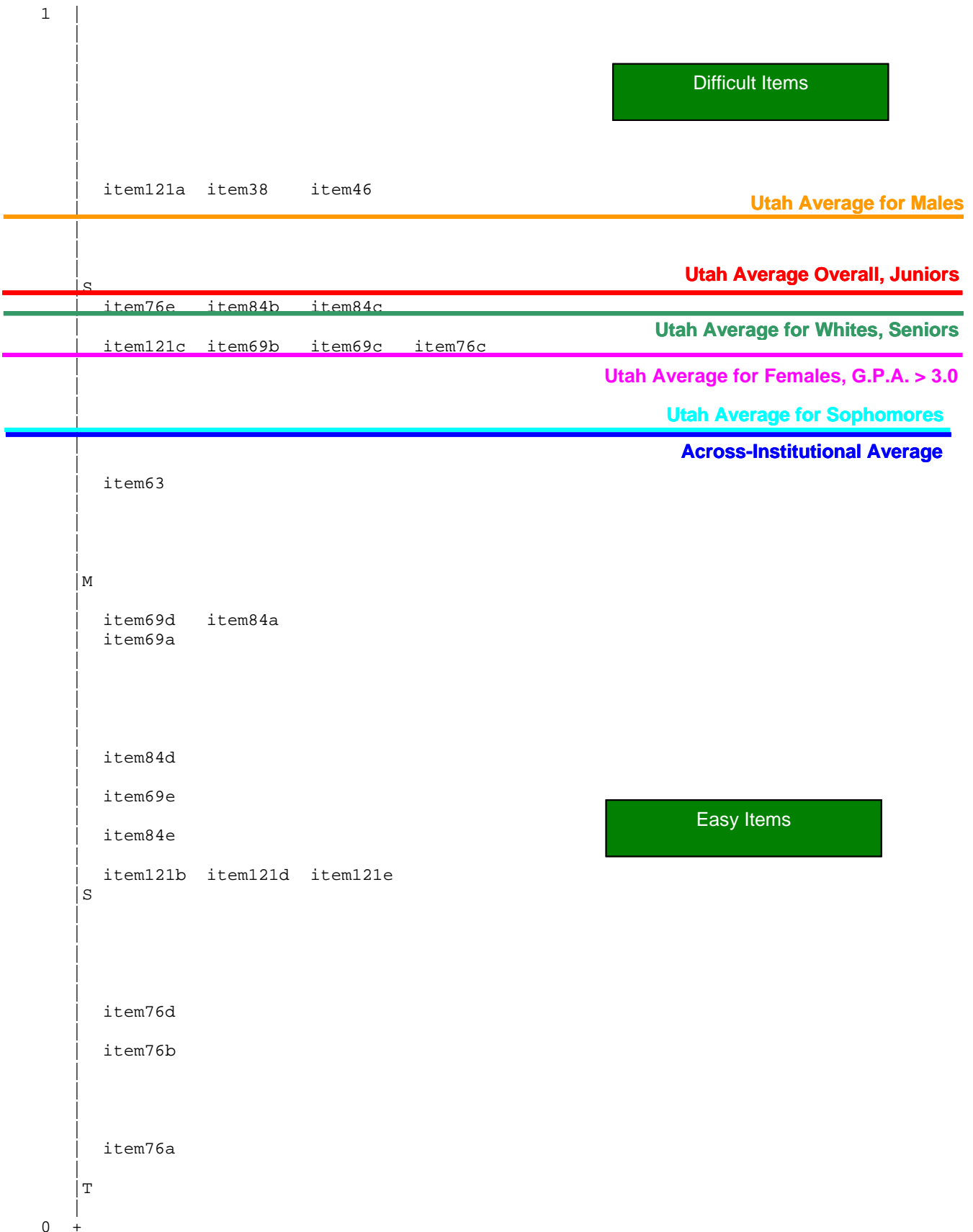


Figure 6. Student Performance on Skill Set 3

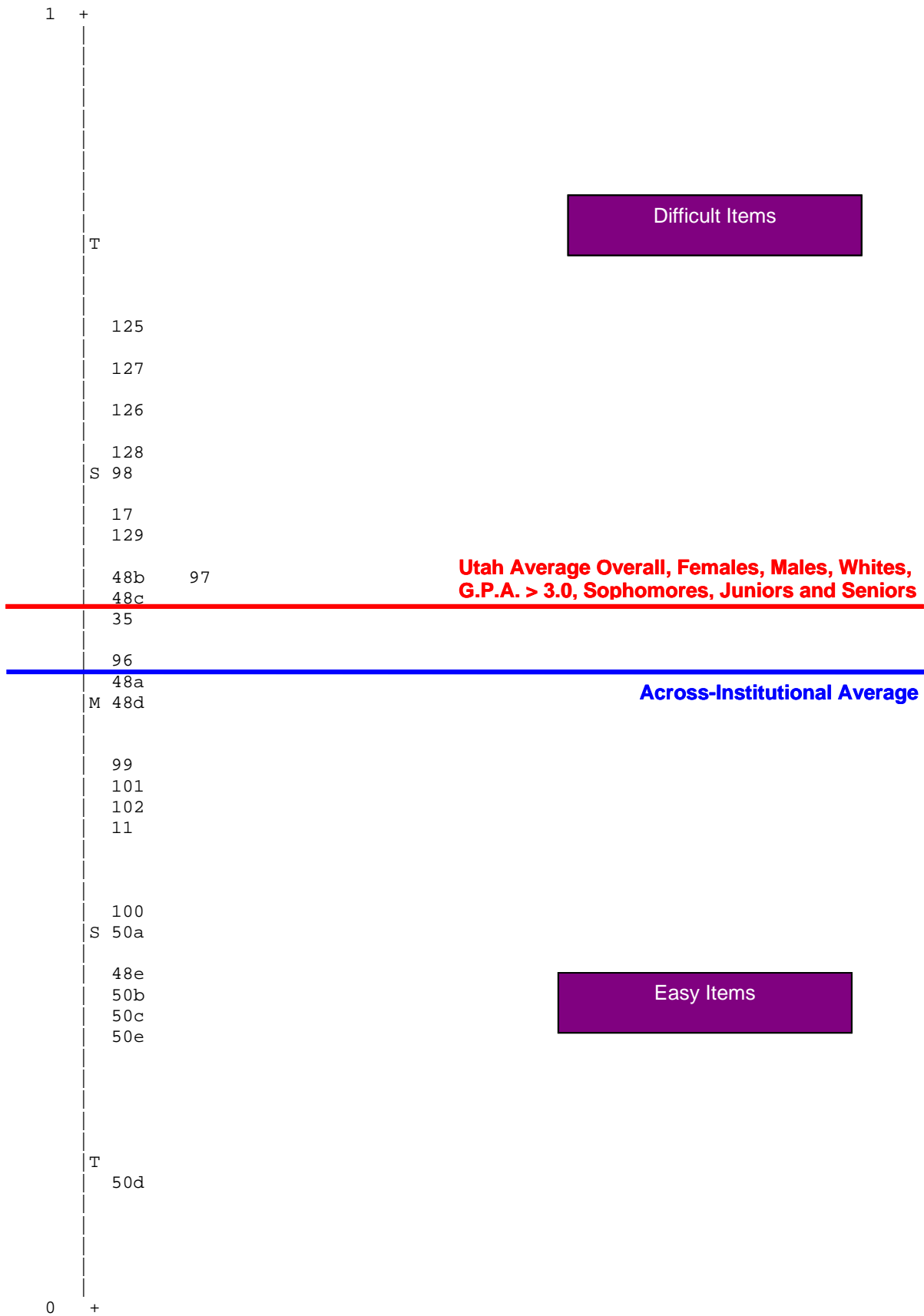


Figure 7. Student Performance on Skill Set 4

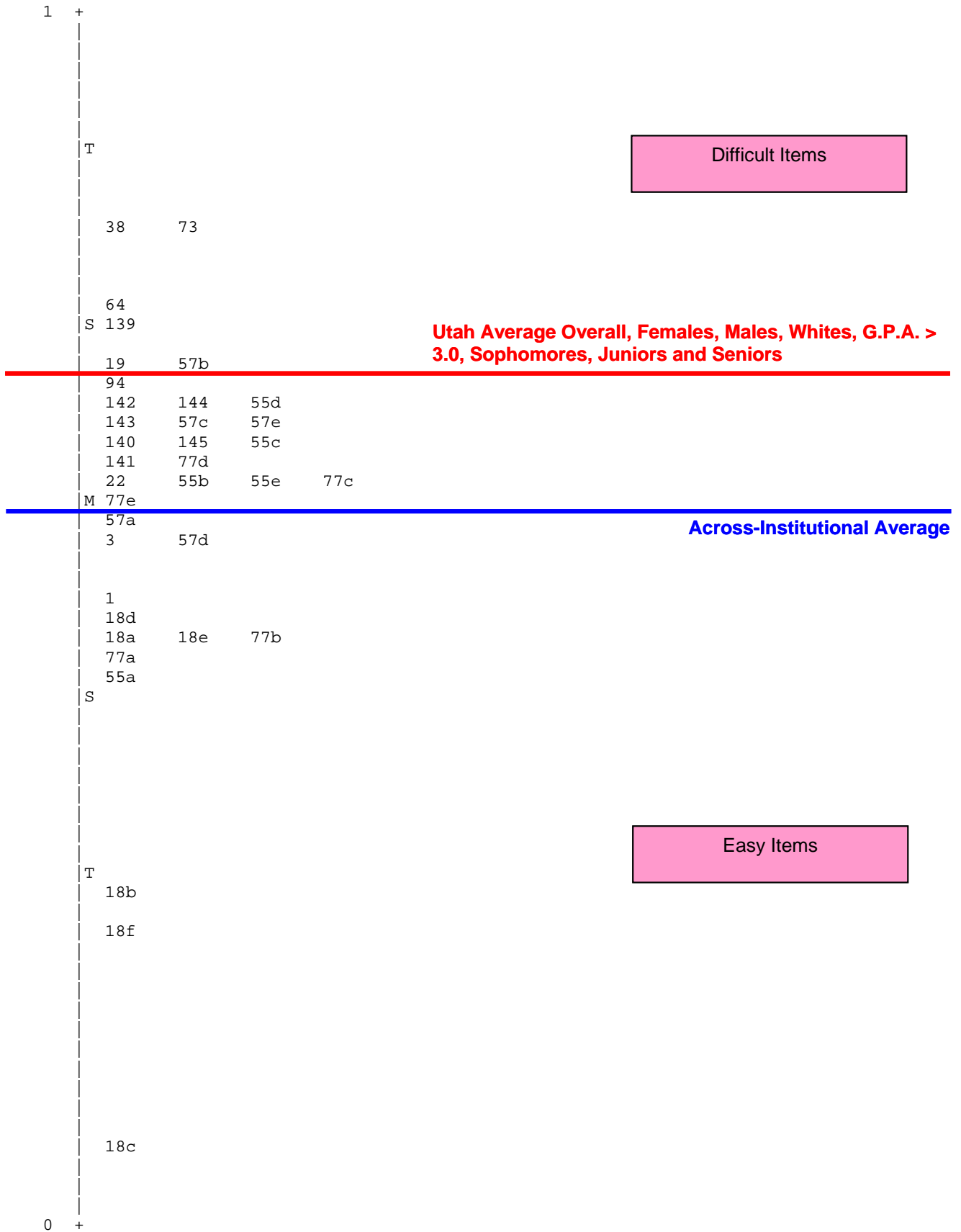


Figure 8. Student Performance on Skill Set 5

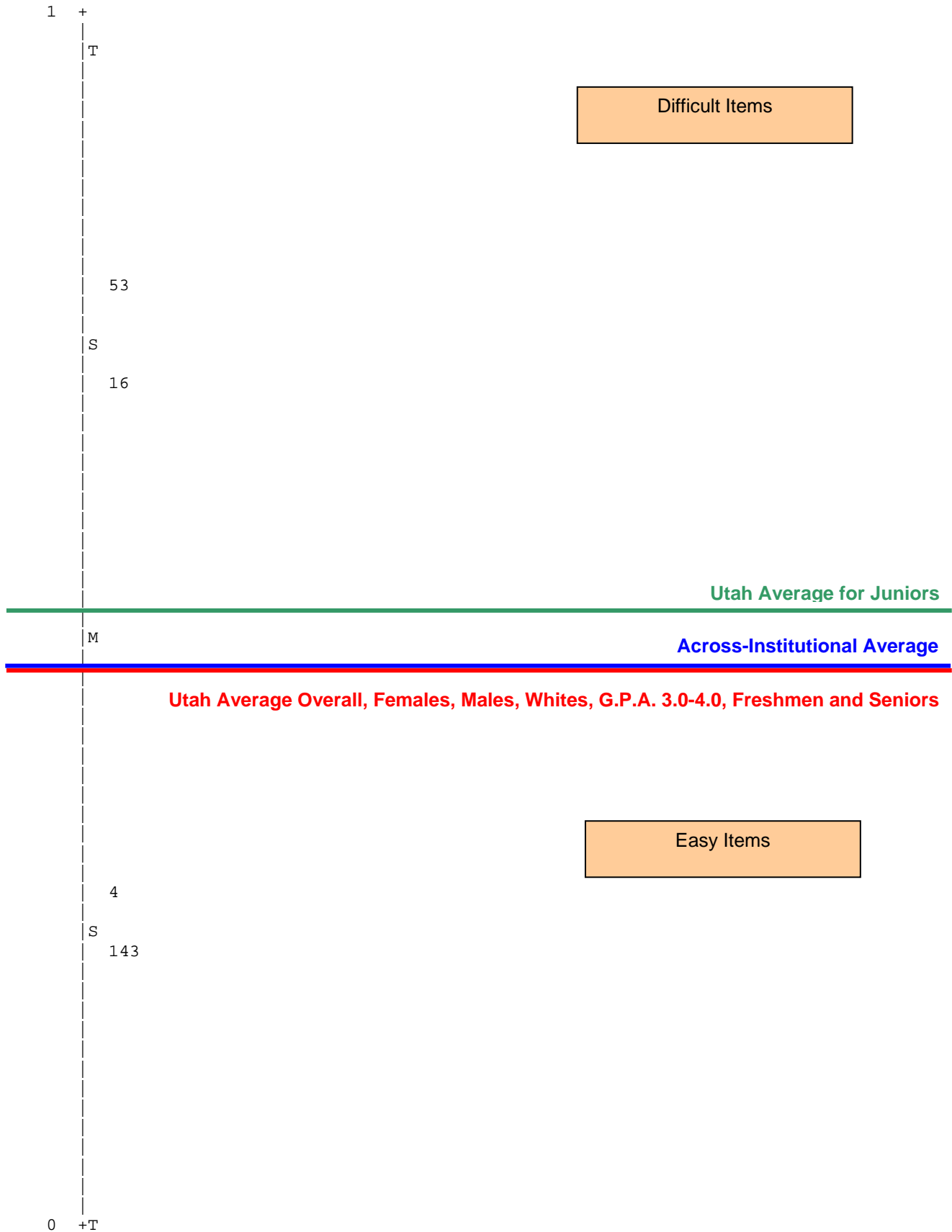


Figure 9. Student Performance on Skill Set 6

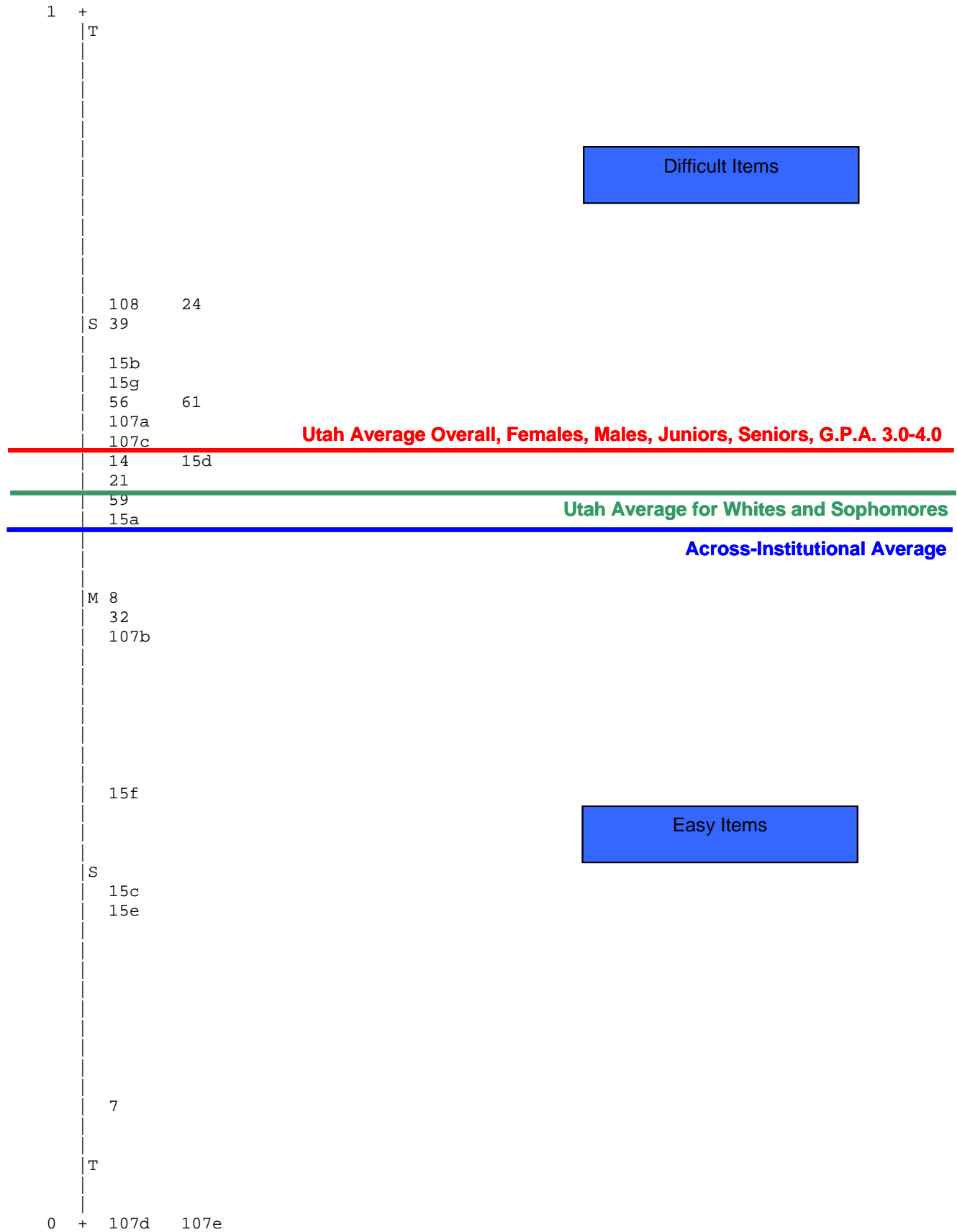


Figure 10. Student Performance on Skill Set 7

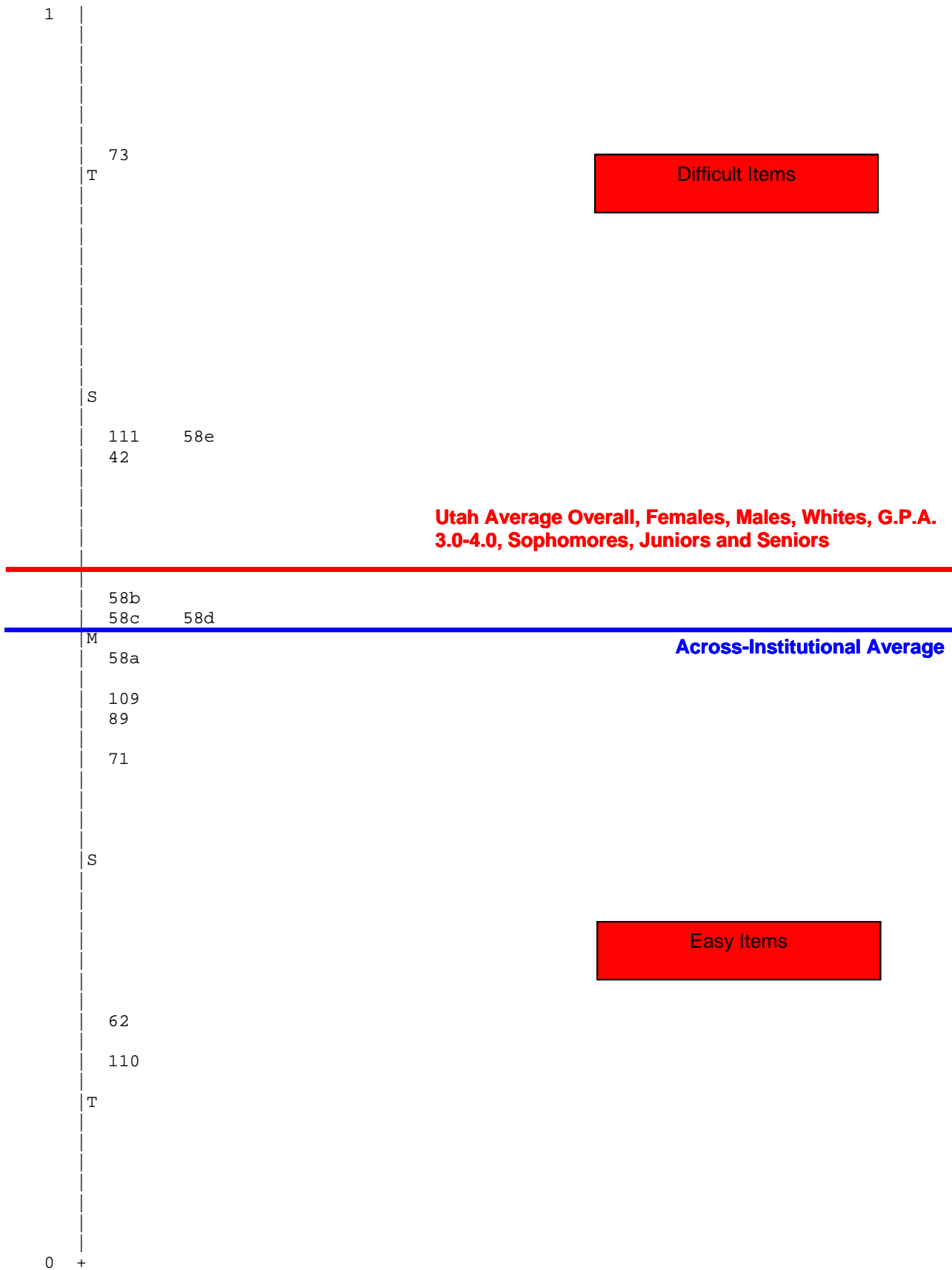


Figure 11. Student Performance on Skill Set 8

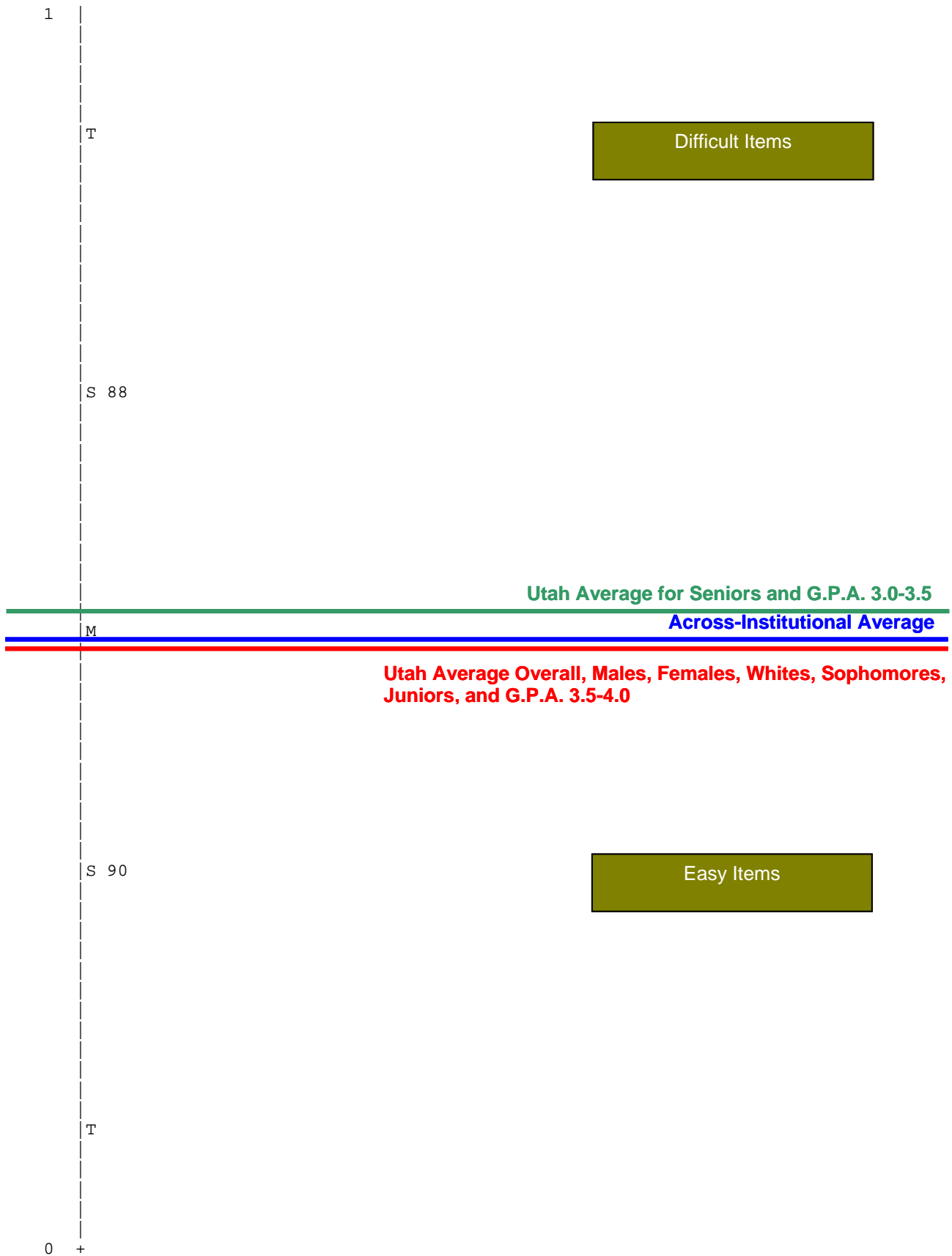


Figure 12. Student Performance on Skill Set 9

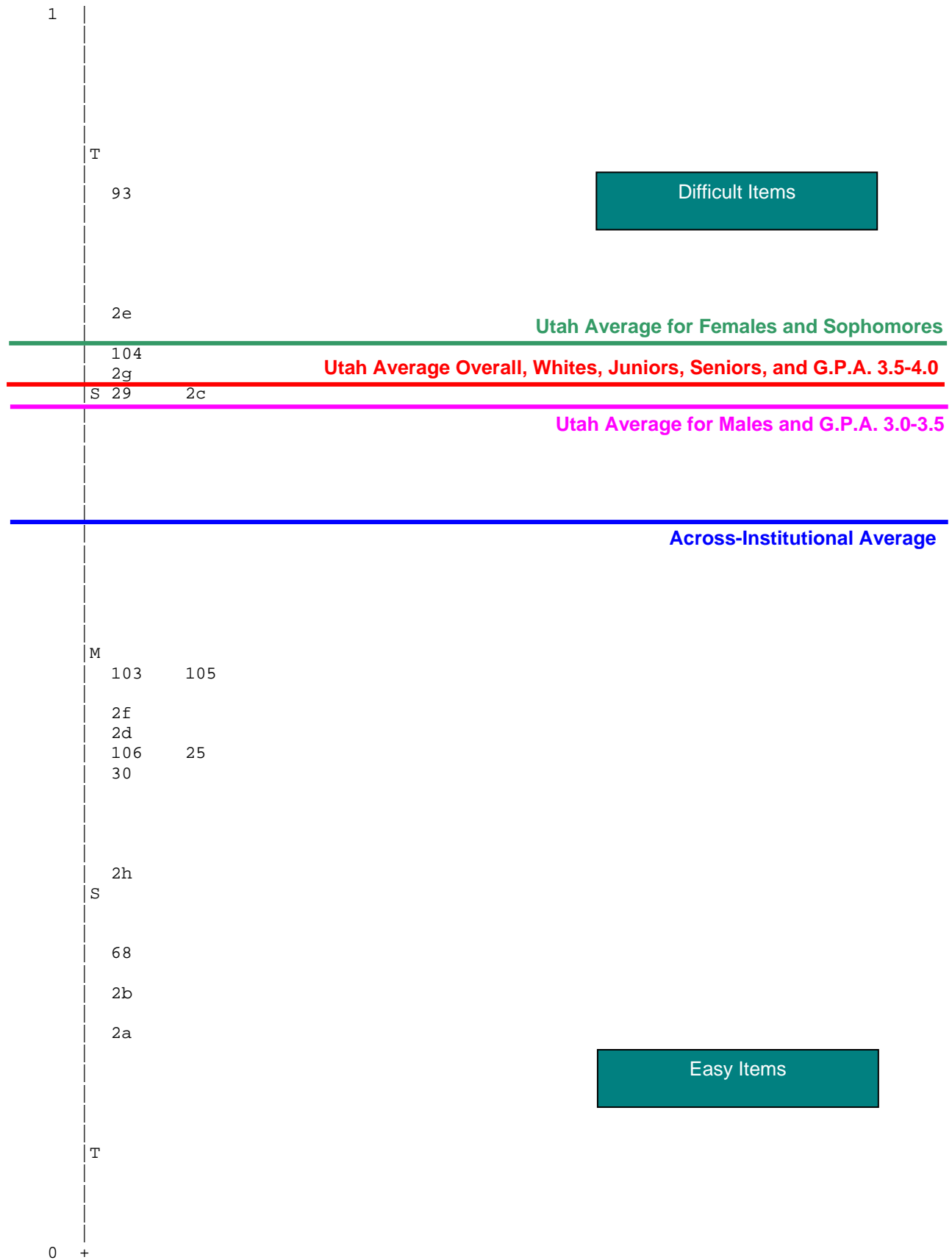


Figure 13. Student Performance on Skill Set 10

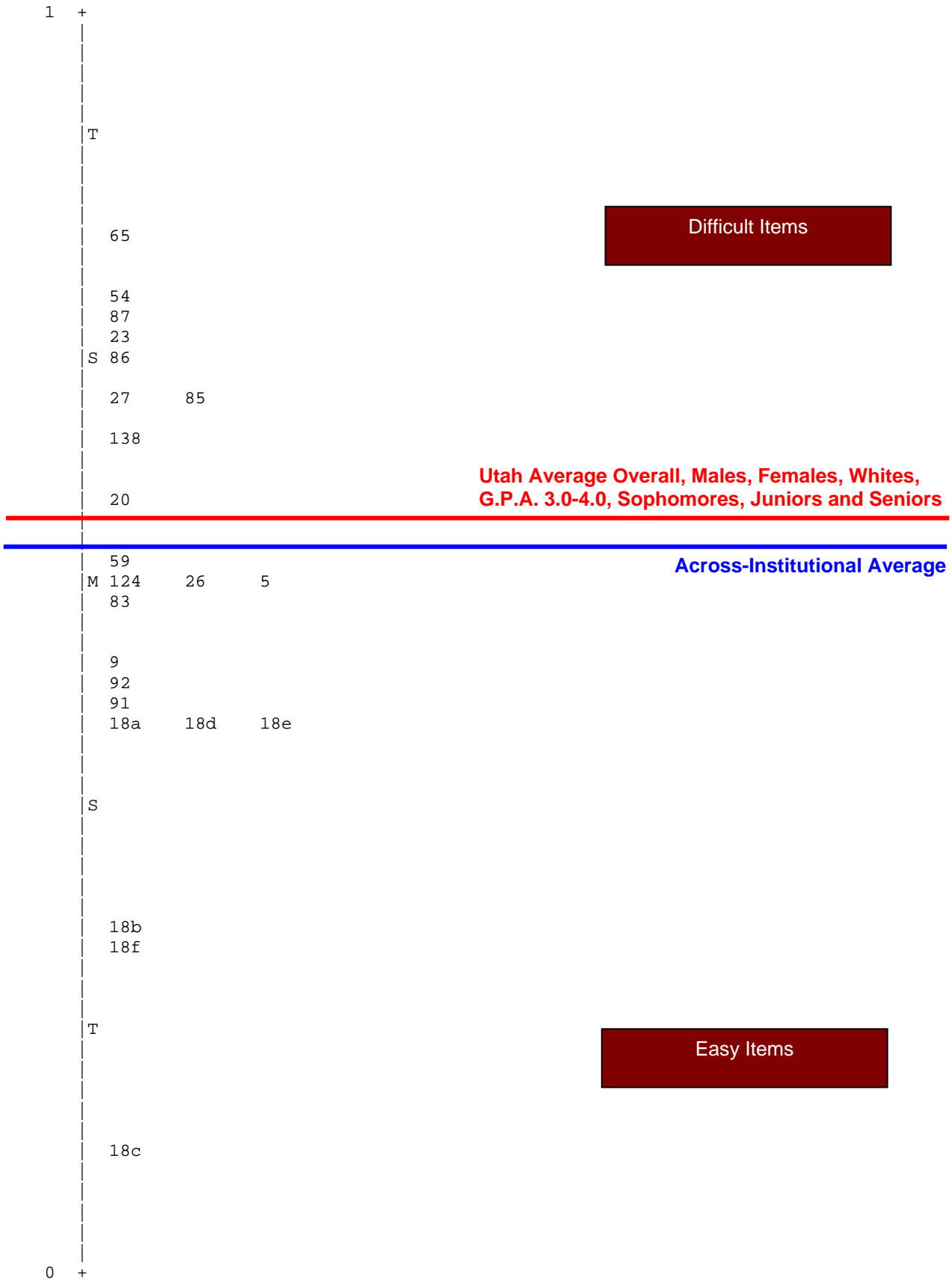


Figure 14. Student Performance on Skill Set 11

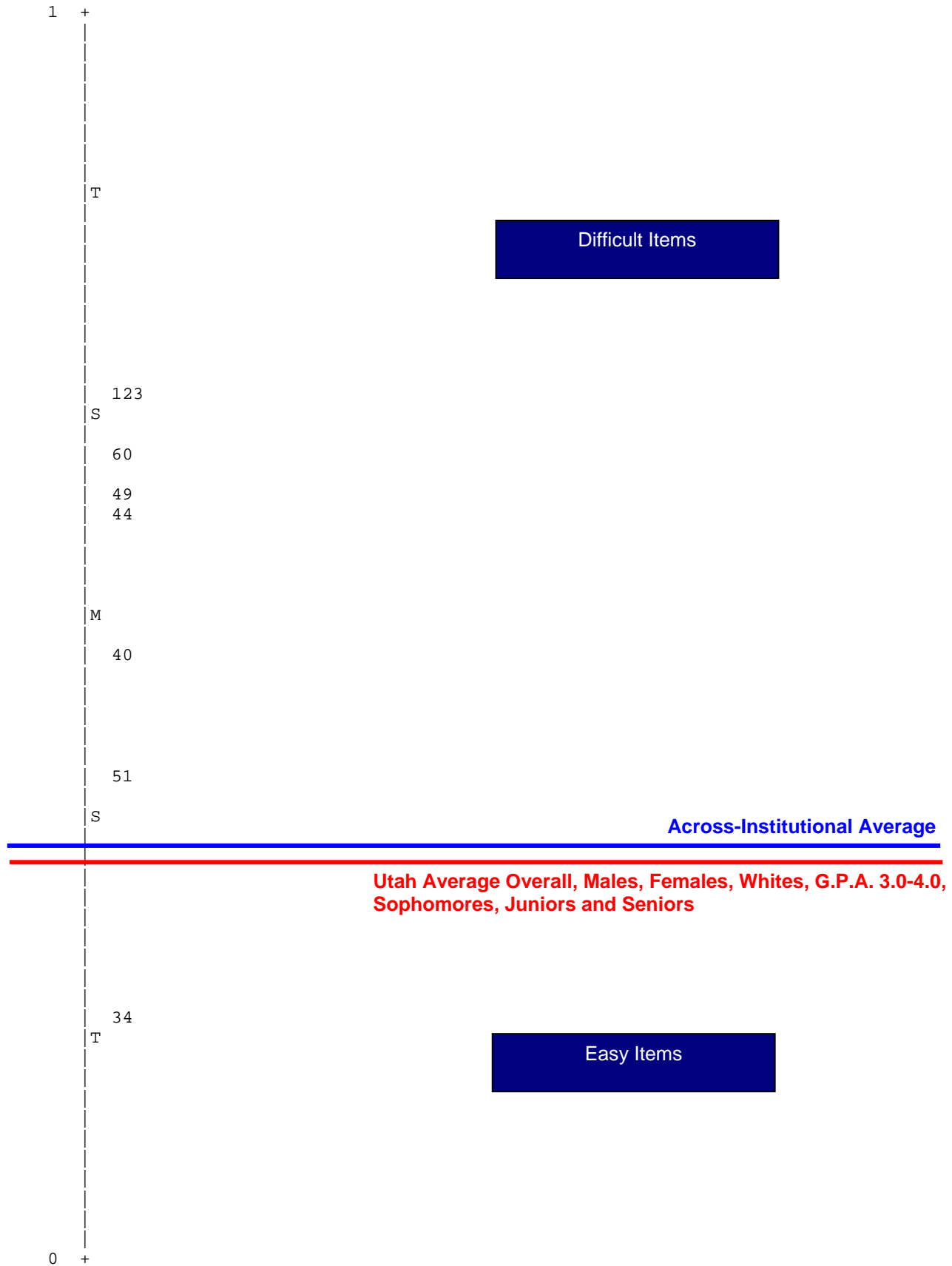
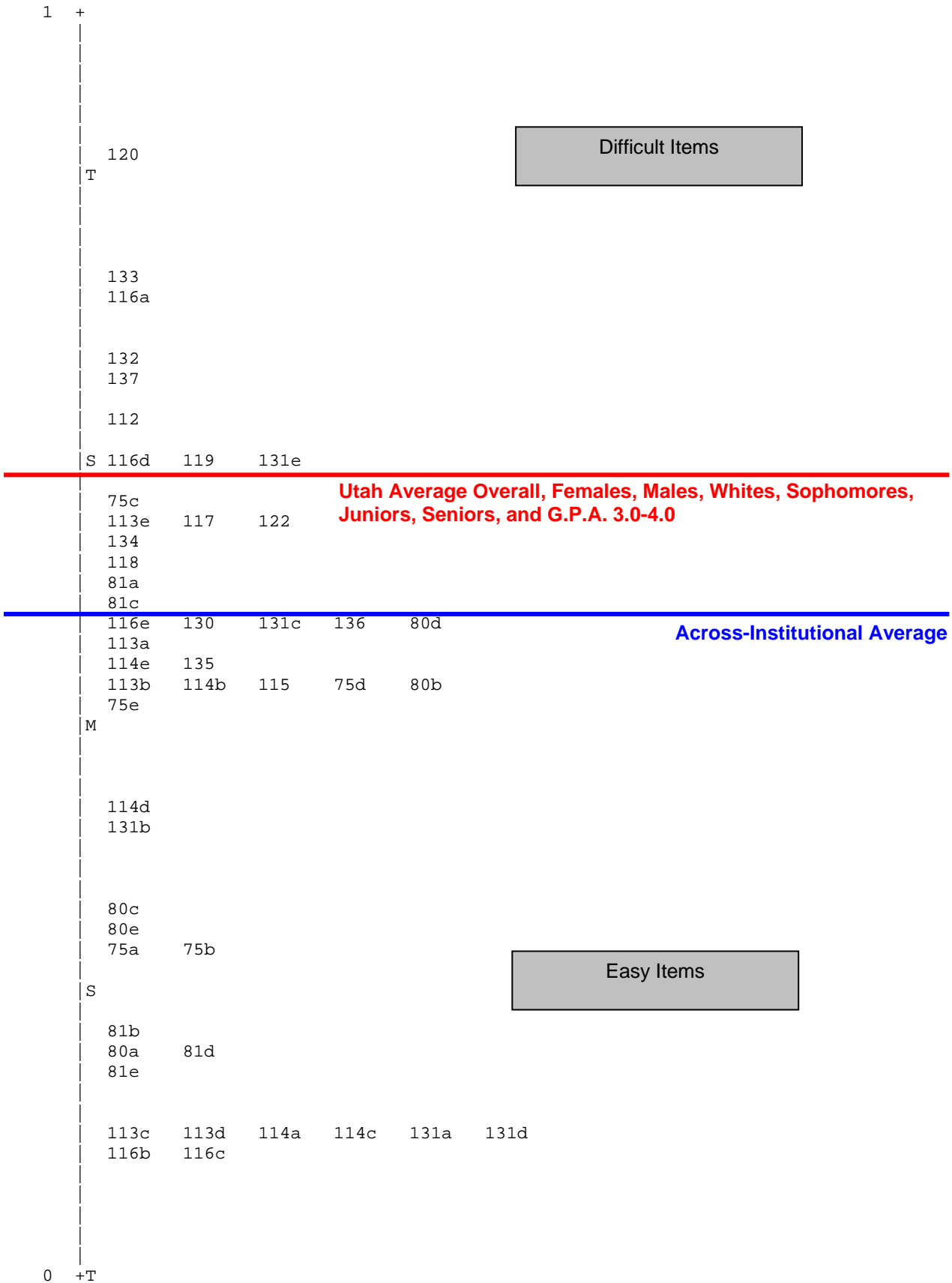


Figure 15. Student Performance on Skill Set 12



Appendices

APPENDIX A	29
About Project SAILS	
APPENDIX B	30
List of all Participating Institutions	
APPENDIX C	31
Student Profiles for each Institution	
Demographics of students who took SAILS test	
APPENDIX D	49
Project SAILS Test Items	
Contains a list of all items that could have been presented to students during testing.	
APPENDIX E	80
Association of College and Research Libraries Information Literacy Competency Standards for Higher Education Standards, Performance Indicators, and Outcomes Approved by: ACRL Board, January 18, 2000.	
Objectives for Information Literacy Instruction: A Model Statement for Academic Librarians Approved by the ACRL Board Jan. 2001.	
APPENDIX F.....	90
Project SAILS Skill Sets	
Groupings by Project SAILS of ACRL’s objectives into 14 skill sets.	

APPENDIX A

About Project SAILS

Our purpose in undertaking the Project for Standardized Assessment of Information Literacy Skills (SAILS) is to develop an instrument for programmatic level assessment of information literacy skills that is valid and thus credible to university administrators and other academic personnel. We envision a standardized tool that is valid and reliable; contains items not specific to a particular institution or library but rather assesses at an institutional level; is easily administered; and provides for both external and internal benchmarking.

In 1998 we began the process of applying systematic instructional design to develop the tool, using item response theory (IRT) as the measurement model. We are producing a bank of questions of varying difficulty levels to measure information literacy. Each question addresses one of the Objectives for Information Literacy Instruction approved by the ACRL Board in January 2001. Use of these objectives will maximize the ability of the instrument to be used by a wide variety of academic institutions for internal and external benchmarking.

With such a tool, we will have the ability to measure information literacy skills, gather national data, provide norms, and compare information literacy measures with other indicators of student achievement. Libraries that utilize SAILS will be able to document information literacy skill levels, establish internal and peer benchmarks of performance, pinpoint areas for improvement, identify and justify resource needs, assess and demonstrate effect of changes in their instructional programs. Librarians will be able to clarify for themselves and their institutions what role, if any, information literacy plays in student success and retention.

In 2002 we applied for and received funds from the Institute of Museum and Library Services. The three-year, \$252,418 grant allows us to continue development of the test instrument and pilot testing at other institutions. Pilot testing, taking place in three different phases, will form the basis of a results database that will address internal and external benchmarking. Each phase will examine both the survey items and test administration, and participating institutions will also work closely with us to develop data report content and survey administration procedures. We also obtained more than \$50,000 in funding for Project SAILS as part of a collaborative Ohio Board of Regents Technology Initiative grant.

Because there is significant overlap between student learning outcomes and information literacy, the Working Group on Learning Outcomes of the Association of Research Libraries (ARL) recommended that the SAILS Project become one of the projects under the ARL New Measures Initiative. By January 2003, the Statistics and Measurement Committee of ARL had endorsed Project SAILS and positioned it as an activity within the Learning Outcomes Working Group agenda. ARL undertook responsibility for coordinating and managing the process of participation for all institutions, including calls for participation, making arrangements for meetings and workshops and handling marketing and public relations for the project.

The overwhelming and enthusiastic response Project SAILS has generated signals that libraries are looking for tools that can help them determine the effectiveness of their information literacy programs. It is yet another example of libraries working collaboratively to create useful, standardized tools to benefit the larger library community.

Kent State University
Carolyn J. Radcliff, Project Administrator
Lisa G. O'Connor, Test Development
Julie A. Gedeon, Evaluation and Measurement
Richard A. Wiggins, Web Programmer
Mary E. Thompson, Project Coordinator

Association of Research Libraries
Julia Blixrud, Assistant Executive Director, External Relations

Appendix B

List of Participating Institutions

1. Auburn University
2. Kent State University
3. Kent State University, Ashtabula Campus
4. Kent State University, East Liverpool
5. Kent State University, Salem Campus
6. Kent State University, Stark Campus
7. Kent State University, Trumbull Campus
8. Kent State University, Tuscarawas Campus
9. Miami University
10. Oregon State University
11. Roosevelt University
12. San Jose State University
13. University of Arizona
14. Utah State University
15. Virginia Polytechnic Institute and State University
16. Washburn University
17. Washington State University
18. Weber State University

Appendix C

Auburn University Student Profile

Demographic Characteristics of Test Takers (N=238)

Characteristic	n	%
Sex		
Male	95	39.9
Female	143	60.1
Ethnicity		
Unknown	8	3.4
African-American	12	5.0
American Indian	0	0.0
Hispanic	2	0.8
Non-resident Alien	0	0.0
Pacific Islander	0	0.0
White	216	90.8
Class Standing		
Freshman	211	88.7
Sophomore	19	8.0
Junior, Senior	8	3.3
Student G.P.A.		
≤ 1.5	6	2.5
1.51-2.00	24	10.1
2.01-2.50	53	22.3
2.51-3.00	59	24.8
3.01-3.50	46	19.3
3.51-4.00	50	21.0
Student Major		
14 - Engineering	38	15.9
52 - Business	34	14.3
Other	166	69.8

Kent State University Student Profile

Demographic Characteristics of Test Takers (N=1575)

Characteristic	n	%
Sex		
Male	563	35.7
Female	1012	64.3
Ethnicity		
Unknown	16	1.0
African-American	106	6.7
American Indian	6	0.4
Hispanic	16	1.0
Non-resident Alien	0	0.0
Pacific Islander	14	0.9
White	1417	90.0
Class Standing		
Freshman	1475	93.7
Sophomore	84	5.3
Junior	12	0.8
Senior	3	0.2
Student G.P.A.		
≤ 1.5	242	15.4
1.51-2.00	211	13.4
2.01-2.50	255	16.2
2.51-3.00	363	23.0
3.01-3.50	259	16.4
3.51-4.00	245	15.6
Student Major		
09 - Communication	55	3.5
13 - Education	183	11.6
24 – Liberal Arts and Sciences	390	24.8
26 – Biological and Biomedical Sciences	34	2.2
42 - Psychology	64	4.1
43 – Security	46	2.9
45 – Social Sciences	42	2.7
49 - Transportation	37	2.3
50 – Visual and Performing Arts	163	10.3
51 - Health	222	14.1
52 - Business	181	11.5
Other majors combined	158	10.0

Kent State University, Ashtabula Campus Student Profile

Demographic Characteristics of Test Takers (N=75)

Characteristic	n	%
Sex		
Male	29	38.7
Female	46	61.3
Ethnicity		
Unknown	2	8.7
African-American	6	8.0
American Indian	0	0.0
Hispanic	1	1.3
Non-resident Alien	0	0.0
Pacific Islander	0	0.0
White	66	88.0
Class Standing		
Freshman	73	97.3
Sophomore	2	2.7
Student G.P.A.		
≤ 1.5	10	13.3
1.51-2.00	13	17.3
2.01-2.50	7	9.4
2.51-3.00	18	24.0
3.01-3.50	16	21.3
3.51-4.00	11	14.7

Kent State University, East Liverpool Campus Student Profile

Demographic Characteristics of Test Takers (N=69)

Characteristic	n	%
Sex		
Male	27	39.1
Female	42	60.9
Ethnicity		
Unknown	3	4.3
African-American	5	7.3
American Indian	0	0.0
Hispanic	1	1.4
Non-resident Alien	1	1.4
Pacific Islander	0	0.0
White	59	85.5
Class Standing		
Freshman	65	94.2
Sophomore	4	5.8
Student G.P.A.		
≤ 1.5	12	17.4
1.51-2.00	6	8.7
2.01-2.50	9	13.0
2.51-3.00	22	31.9
3.01-3.50	7	10.1
3.51-4.00	13	18.8

Kent State University, Salem Campus Student Profile

Demographic Characteristics of Test Takers (N=126)

Characteristic	n	%
Sex		
Male	45	35.7
Female	81	64.3
Ethnicity		
Unknown	1	0.8
African-American	11	8.7
American Indian	0	0.0
Hispanic	3	2.4
Non-resident Alien	0	0.0
Pacific Islander	1	0.8
White	110	87.3
Class Standing		
Freshman	119	94.4
Sophomores, Juniors, Seniors	7	5.6
Student G.P.A.		
≤ 1.5	20	15.9
1.51-2.00	16	12.7
2.01-2.50	22	17.5
2.51-3.00	34	27.0
3.01-3.50	15	11.9
3.51-4.00	19	15.1

Kent State University, Stark Campus Student Profile

Demographic Characteristics of Test Takers (N=236)

Characteristic	n	%
Sex		
Male	78	33.1
Female	158	66.9
Ethnicity		
Unknown	2	0.8
African-American	10	4.2
American Indian	0	0.0
Hispanic	3	1.3
Non-resident Alien	0	0.0
Pacific Islander	3	1.3
White	218	92.4
Class Standing		
Freshman	209	88.6
Sophomores	24	10.2
Juniors, Seniors	3	1.2
Student G.P.A.		
≤ 1.5	20	8.5
1.51-2.00	25	10.6
2.01-2.50	53	22.5
2.51-3.00	57	24.2
3.01-3.50	43	18.2
3.51-4.00	38	16.1
Student Major		
24 – Liberal Arts	64	27.1
51 – Health	32	13.6
Other majors combined	140	59.3

Kent State University, Trumbull Campus Student Profile

Demographic Characteristics of Test Takers (N=58)

Characteristic	n	%
Sex		
Male	24	41.4
Female	34	58.6
Ethnicity		
Unknown	0	0.0
African-American	1	1.7
American Indian	0	0.0
Hispanic	0	0.0
Non-resident Alien	0	0.0
Pacific Islander	0	0.0
White	57	98.3
Class Standing		
Freshman	55	94.8
Sophomores, Juniors	3	5.2
Student G.P.A.		
≤ 1.5	6	10.3
1.51-2.00	7	12.1
2.01-2.50	10	17.2
2.51-3.00	12	20.7
3.01-3.50	13	22.4
3.51-4.00	10	17.2

Kent State University, Tuscarawas Campus Student Profile

Demographic Characteristics of Test Takers (N=236)

Characteristic	n	%
Sex		
Male	82	39.6
Female	125	60.4
Ethnicity		
Unknown	1	0.5
African-American	17	8.2
American Indian	1	0.5
Hispanic	2	1.0
Non-resident Alien	1	0.5
Pacific Islander	2	1.0
White	183	88.4
Class Standing		
Freshman	192	92.8
Sophomores	12	5.8
Juniors, Seniors	3	1.4
Student G.P.A.		
≤ 1.5	26	12.6
1.51-2.00	29	14.0
2.01-2.50	33	15.9
2.51-3.00	54	26.1
3.01-3.50	31	15.0
3.51-4.00	34	16.4
Student Major		
24 – Liberal Arts	53	25.6
51 – Health	49	23.7
Other	105	50.7

Miami University Student Profile

Demographic Characteristics of Test Takers (N=442)

Characteristic	n	%
Sex		
Male	189	43.0
Female	251	57.0
Ethnicity		
Unknown	13	3.0
African-American	14	3.2
American Indian	3	0.7
Hispanic	11	2.5
Non-resident Alien	1	0.2
Pacific Islander	17	3.9
White	381	86.6
Class Standing		
Freshman	162	37.0
Sophomore	134	30.6
Junior	76	17.4
Senior	66	15.0
Student G.P.A.		
≤ 1.5	0	0.0
1.51-2.00	5	1.8
2.01-2.50	31	11.2
2.51-3.00	71	25.5
3.01-3.50	99	35.6
3.51-4.00	72	25.9
Student Major		
24 – Liberal Arts and Sciences	50	11.3
26 – Biological and Biomedical Sciences	111	25.1
Other majors combined	281	63.6
Test Monitoredness		
Unmonitored	100	22.6
Highly monitored	342	77.4

Oregon State University Student Profile

Demographic Characteristics of Test Takers (N=493)

Characteristic	n	%
Sex		
Male	230	48.7
Female	242	51.3
Class Standing		
Freshman	399	84.7
Sophomore	56	11.9
Junior	4	0.8
Senior	8	1.7
Other	4	0.8
Student G.P.A.		
≤ 1.5	30	6.4
1.51-2.00	97	20.6
2.01-2.50	0	0.0
2.51-3.00	253	53.7
3.01-3.50	0	0
3.51-4.00	91	19.3

Roosevelt University Student Profile

Demographic Characteristics of Test Takers (N=202)

Characteristic	n	%
Sex		
Male	61	31.4
Female	133	68.6
Ethnicity		
Unknown	20	10.3
African-American	49	25.1
American Indian	0	0.0
Hispanic	24	12.3
Non-resident Alien	4	2.1
Pacific Islander	5	2.6
White	93	47.7
Class Standing		
Freshman	69	36.7
Sophomore	51	27.1
Junior	41	21.8
Senior	27	14.4
Student G.P.A.		
≤ 1.5	2	1.6
1.51-2.00	6	4.9
2.01-2.50	15	12.3
2.51-3.00	32	26.2
3.01-3.50	22	18.0
3.51-4.00	45	36.9
Student Major		
52 - Business	46	22.8
Other majors combined	156	81.2

San Jose State University Student Profile

Demographic Characteristics of Test Takers (N=101)

Characteristic	n	%
Sex		
Male	51	51.0
Female	49	49.0
Ethnicity		
Unknown	16	16.0
African-American	2	2.0
American Indian	1	1.0
Hispanic	12	12.0
Non-resident Alien	0	0.0
Pacific Islander	57	57.0
White	12	12.0
Class Standing		
Freshman	4	4.0
Sophomore	26	26.0
Junior	35	35.0
Senior	32	32.0
Other	3	3.0
Student G.P.A.		
≤ 1.5	0	0.0
1.51-2.00	3	3.0
2.01-2.50	36	36.0
2.51-3.00	38	38.0
3.01-3.50	16	16.0
3.51-4.00	7	7.0
Student Major		
Business	59	58.4
Other	42	41.6

University of Arizona Student Profile

Demographic Characteristics of Test Takers (N=193)

Characteristic	n	%
Sex		
Male	112	58.0
Female	81	42.0
Ethnicity		
Unknown	25	13.0
African-American	27	14.0
American Indian	2	1.0
Hispanic	24	12.4
Non-resident Alien	0	0.0
Pacific Islander	19	9.8
White	96	49.7
Class Standing		
Freshman	18	9.3
Sophomore	85	44.0
Junior	41	21.2
Senior	49	25.4
Student G.P.A.		
≤ 1.5	5	2.6
1.51-2.00	13	6.8
2.01-2.50	38	19.8
2.51-3.00	53	27.6
3.01-3.50	44	22.9
3.51-4.00	39	20.3
Student Major		
14 – Engineering	34	20.4
52 – Business	29	17.4
Other	104	62.2

Utah State University Student Profile

Demographic Characteristics of Test Takers (N=172)

Characteristic	n	%
Sex		
Male	80	47.3
Female	89	52.7
Ethnicity		
Unknown	3	1.8
African-American	0	0.0
American Indian	1	0.6
Hispanic	4	2.4
Non-resident Alien	12	7.1
Pacific Islander	2	1.2
White	147	87.0
Class Standing		
Freshman	20	12.9
Sophomore	42	27.1
Junior	54	34.8
Senior	39	25.2
Student G.P.A.		
≤ 1.5	29	17.4
1.51-2.00	3	1.8
2.01-2.50	12	7.2
2.51-3.00	25	15.0
3.01-3.50	31	18.6
3.51-4.00	67	40.1

Virginia Polytechnic Institute and State University Student Profile

Demographic Characteristics of Test Takers (N=511)

Characteristic	n	%
Sex		
Male	154	30.4
Female	352	69.6
Ethnicity		
Unknown	10	2.0
African-American	29	5.7
American Indian	0	0.0
Hispanic	7	1.4
Non-resident Alien	9	1.8
Pacific Islander	23	4.5
White	429	84.6
Class Standing		
Freshman	109	21.5
Sophomore	96	18.9
Junior	138	27.2
Senior	159	31.4
Other	5	1.0
Student G.P.A.		
≤ 1.5	11	2.2
1.51-2.00	18	3.6
2.01-2.50	77	15.2
2.51-3.00	150	29.6
3.01-3.50	164	32.4
3.51-4.00	86	17.9
Student Major		
Family & Consumer Sciences	162	32.0
Biological & Biomedical Sciences	111	21.9
Other majors	234	46.1

Washburn University Student Profile

Demographic Characteristics of Test Takers (N=111)

Characteristic	n	%
Sex		
Male	54	48.6
Female	57	51.4
Ethnicity		
Unknown	21	18.9
African-American	4	3.6
American Indian	1	0.9
Hispanic	4	3.6
Non-resident Alien	0	0.0
Pacific Islander	1	0.9
White	80	72.1
Class Standing		
Freshman	31	32.0
Sophomore	22	22.7
Junior	20	20.6
Senior	24	24.7
Student G.P.A.		
≤ 1.5	35	31.5
1.51-2.00	4	3.6
2.01-2.50	12	10.8
2.51-3.00	18	16.2
3.01-3.50	18	16.2
3.51-4.00	24	21.6

Washington State University Student Profile

Demographic Characteristics of Test Takers (N=156)

Characteristic	n	%
Sex		
Male	69	44.2
Female	87	55.8
Ethnicity		
Unknown	15	9.6
African-American	9	5.8
American Indian	4	2.6
Hispanic	12	7.7
Non-resident Alien	0	0.0
Pacific Islander	13	8.3
White	103	66.0
Class Standing		
Freshman	23	14.7
Sophomore	27	17.3
Junior	50	32.1
Senior	53	34.0
Other	3	1.9
Student G.P.A.		
≤ 1.5	6	3.8
1.51-2.00	15	9.6
2.01-2.50	24	15.4
2.51-3.00	33	21.2
3.01-3.50	37	23.7
3.51-4.00	41	26.3

Weber State University Student Profile

Demographic Characteristics of Test Takers (N=399)

Characteristic	n	%
Sex		
Male	164	42.4
Female	223	57.6
Ethnicity		
Unknown	55	14.2
African-American	0	0.0
American Indian	4	1.0
Hispanic	10	2.6
Non-resident Alien	4	1.0
Pacific Islander	10	2.6
White	303	78.5
Class Standing		
Freshman	56	14.5
Sophomore	173	44.7
Junior	105	27.1
Senior	52	13.4
Other	1	0.3
Student G.P.A.		
≤ 1.5	2	0.5
1.51-2.00	8	2.1
2.01-2.50	33	8.8
2.51-3.00	90	23.9
3.01-3.50	115	30.6
3.51-4.00	128	34.0
Student Major		
13 - Education	48	16.9
24 - Liberal Arts	138	48.6
51 - Health	53	18.7
52 - Business	45	15.8

APPENDIX E

Association of College and Research Libraries Information Literacy Competency Standards for Higher Education Standards, Performance Indicators, and Outcomes Approved by: ACRL Board, January 18, 2000.

Objectives for Information Literacy Instruction: A Model Statement for Academic Librarians Approved by the ACRL Board Jan. 2001.

Standard I

The information literate student determines the nature and extent of the information needed.

Performance Indicators

- 1.1. The information literate student defines and articulates the need for information.

10

Outcomes

- 1.1.1. Confers with instructors and participates in class discussions, peer workgroups, and electronic discussions to identify a research topic, or other information need
1.1.2. Develops a thesis statement and formulates questions based on the information need
1.1.3. Explores general information sources to increase familiarity with the topic

Objectives

- 1.1.3.1 Describes the difference between general and subject-specific information sources.
1.1.3.2 Demonstrates when it is appropriate to use a general and subject-specific information source (e.g., to provide an overview, to give ideas on terminology).

Items

64, 73

- 1.1.4. Defines or modifies the information need to achieve a manageable focus
1.1.4.1 Identifies an initial question that might be too broad or narrow, as well as one that is probably manageable.
1.1.4.2 Explains his/her reasoning regarding the manageability of a topic with reference to available information sources.
1.1.4.3 Narrows a broad topic and broadens a narrow one by modifying the scope or direction of the question.
1.1.4.4 Demonstrates an understanding of how the desired end product (i.e., the required depth of investigation and analysis) will play a role in determining the need for information.
1.1.4.5 Uses background information sources effectively to gain an initial understanding of the topic.
95
1.1.4.6 Consults with the course instructor and librarians to develop a manageable focus for the topic.
33
1.1.5. Identifies key concepts and terms that describe the information need
1.1.5.1 Lists terms that may be useful for locating information on a topic.
43

- 1.1.5.2 Identifies and uses appropriate general or subject-specific sources to discover terminology related to an information need.
 - 1.1.5.3 Decides when a research topic has multiple facets or may need to be put into a broader context.
 - 1.1.5.4 Identifies more specific concepts that comprise a research topic.
 - 1.1.6 Recognizes that existing information can be combined with original thought, experimentation, and/or analysis to produce new information
- 1.2 The information literate student identifies a variety of types and formats of potential sources for information.
- 1.2.1 Knows how information is formally and informally produced, organized, and disseminated
 - 1.2.1.1 Describes the publication cycle appropriate to the discipline of a research topic.
 - 1.2.1.2 Defines the "invisible college" (e.g., personal contacts, listservs specific to a discipline or subject) and describes its value.
46
 - 1.2.2 Recognizes that knowledge can be organized into disciplines that influence the way information is accessed
 - 1.2.2.1 Names the three major disciplines of knowledge (humanities, social sciences, sciences) and some subject fields that comprise each discipline.
69, 76, 84, 121
 - 1.2.2.2 Finds sources that provide relevant subject field- and discipline-related terminology.
 - 1.2.2.3 Uses relevant subject- and discipline-related terminology in the information research process.
 - 1.2.2.4 Describes how the publication cycle in a particular discipline or subject field affects the researcher's access to information.
38, 63
 - 1.2.3 Identifies the value and differences of potential resources in a variety of formats (e.g., multimedia, database, website, data set, audio/visual, book)
 - 1.2.3.1 Identifies various formats in which information is available.
50
 - 1.2.3.2 Demonstrates how the format in which information appears may affect its usefulness for a particular information need.
 - 1.2.4 Identifies the purpose and audience of potential resources (e.g., popular vs. scholarly, current vs. historical)
 - 1.2.4.1 Distinguishes characteristics of information provided for different audiences.
5, 9, 20, 23, 26, 27
 - 1.2.4.2 Identifies the intent or purpose of an information source (this may require use of additional sources in order to develop an appropriate context).
54
 - 1.2.5 Differentiates between primary and secondary sources, recognizing how their use and importance vary with each discipline
 - 1.2.5.1 Describes how various fields of study define primary and secondary sources differently.
99, 100, 101, 102,
 - 1.2.5.2 Identifies characteristics of information that make an item a primary or secondary source in a given field.
11, 17, 35, 48, 96, 97, 98
 - 1.2.6 Realizes that information may need to be constructed with raw data from primary sources
- 1.3 The information literate student considers the costs and benefits of acquiring the needed information.
- 1.3.1 Determines the availability of needed information and makes decisions on broadening the information seeking process beyond local resources (e.g., interlibrary loan; using resources at other locations; obtaining images, videos, text, or sound)
 - 1.3.1.1 Determines if material is available immediately.
103, 104, 105, 106

- 1.3.1.2 Uses available services appropriately to obtain desired materials or alternative sources.
30, 68, 93,
- 1.3.2 Considers the feasibility of acquiring a new language or skill (e.g., foreign or discipline-based) in order to gather needed information and to understand its context
- 1.3.3 Defines a realistic overall plan and timeline to acquire the needed information
 - 1.3.3.1 Searches for and gathers information based on an informal, flexible plan.
 - 1.3.3.2 Demonstrates a general knowledge of how to obtain information that is not available immediately.
68, 93
 - 1.3.3.3 Acts appropriately to obtain information within the time frame required.
68, 93
- 1.4 The information literate student reevaluates the nature and extent of the information need.
 - 1.4.1 Reviews the initial information need to clarify, revise, or refine the question
 - 1.4.1.1 Identifies a research topic that may require revision, based on the amount of information found (or not found).
 - 1.4.1.2 Identifies a topic that may need to be modified, based on the content of information found.
 - 1.4.1.3 Decides when it is and is not necessary to abandon a topic depending on the success (or failure) of an initial search for information
 - 1.4.2 Describes criteria used to make information decisions and choices
 - 1.4.2.1 Demonstrates how the intended audience influences information choices.
5, 9, 20,
 - 1.4.2.2 Demonstrates how the desired end product influences information choices (e.g., that visual aids or audio/visual material may be needed for an oral presentation).
 - 1.4.2.3 Lists various criteria, such as currency, which influence information choices

Standard II

The information literate student accesses needed information effectively and efficiently.

- 2.1 The information literate student selects the most appropriate investigative methods or information retrieval systems for accessing the needed information.
 - 2.1.1 Identifies appropriate investigative methods (e.g., laboratory experiment, simulation, fieldwork)
 - 2.1.2 Investigates benefits and applicability of various investigative methods
 - 2.1.3 Investigates the scope, content, and organization of information retrieval systems
55
 - 2.1.3.1 Describes the structure and components of the system or tool being used, regardless of format (e.g., index, thesaurus, type of information retrieved by the system).
 - 2.1.3.2 Identifies the source of help within a given information retrieval system and uses it effectively.
71
 - 2.1.3.3 Identifies what types of information are contained in a particular system (e.g., all branch libraries are included in the catalog; not all databases are full text; catalogs, periodical databases, and Web sites may be included in a gateway).
 - 2.1.3.4 Distinguishes among indexes, online databases, and collections of online databases, as well as gateways to different databases and collections.
1, 19, 22
 - 2.1.3.5 Selects appropriate tools (e.g., indexes, online databases) for research on a particular topic.
3, 18, 94
 - 2.1.3.6 Identifies the differences between freely available Internet search tools and subscription or fee-based databases.
57, 139, 140, 141, 142, 143, 144, 145
 - 2.1.3.7 Identifies and uses search language and protocols (e.g., Boolean, adjacency) appropriate to the retrieval system.
 - 2.1.3.8 Determines the period of time covered by a particular source.

- 2.1.3.9 Identifies the types of sources that are indexed in a particular database or index (e.g., an index that covers newspapers or popular periodicals versus a more specialized index to find scholarly literature).
- 2.1.3.10 Demonstrates when it is appropriate to use a single tool (e.g., using only a periodical index when only periodical articles are required).
- 2.1.3.11 Distinguishes between full-text and bibliographic databases.
- 2.1.4 Selects efficient and effective approaches for accessing the information needed from the investigative method or information retrieval system
 - 2.1.4.1 Selects appropriate information sources (i.e., primary, secondary or tertiary sources) and determines their relevance for the current information need.
138
 - 2.1.4.2 Determines appropriate means for recording or saving the desired information (e.g., printing, saving to disc, photocopying, taking notes).
 - 2.1.4.3 Analyzes and interprets the information collected using a growing awareness of key terms and concepts to decide whether to search for additional information or to identify more accurately when the information need has been met.
- 2.2 The information literate student constructs and implements effectively-designed search strategies.
 - 2.2.1 Develops a research plan appropriate to the investigative method
 - 2.2.1.1 Describes a general process for searching for information.
67
 - 2.2.1.2 Describes when different types of information (e.g., primary/secondary, background/specific) may be suitable for different purposes.
 - 2.2.1.3 Gathers and evaluates information and appropriately modifies the research plan as new insights are gained.
 - 2.2.2 Identifies keywords, synonyms and related terms for the information needed
 - 2.2.2.1 Identifies keywords or phrases that represent a topic in general sources (e.g., library catalog, periodical index, online source) and in subject-specific sources.
 - 2.2.2.2 Demonstrates an understanding that different terminology may be used in general sources and subject-specific sources.
 - 2.2.2.3 Identifies alternate terminology, including synonyms, broader or narrower words and phrases that describe a topic.
 - 2.2.2.4 Identifies keywords that describe an information source (e.g., book, journal article, magazine article, Web site).
125, 126, 127, 128, 129
 - 2.2.3 Selects controlled vocabulary specific to the discipline or information retrieval source
 - 2.2.3.1 Uses background sources (e.g., encyclopedias, handbooks, dictionaries, thesauri, textbooks) to identify discipline-specific terminology that describes a given topic.
 - 2.2.3.2 Explains what controlled vocabulary is and why it is used.
4, 16, 53
 - 2.2.3.3 Identifies search terms likely to be useful for a research topic in relevant controlled vocabulary lists.
 - 2.2.3.4 Identifies when and where controlled vocabulary is used in a bibliographic record, and then successfully searches for additional information using that vocabulary.
53
 - 2.2.4 Constructs a search strategy using appropriate commands for the information retrieval system selected (e.g., Boolean operators, truncation, and proximity for search engines; internal organizers such as indexes for books)
 - 2.2.4.1 Demonstrates when it is appropriate to search a particular field (e.g., title, author, subject).
7, 14, 21
 - 2.2.4.2 Demonstrates an understanding of the concept of Boolean logic and constructs a search statement using Boolean operators.
14, 21, 24, 32, 39, 56, 61, 107, 108
 - 2.2.4.3 Demonstrates an understanding of the concept of proximity searching and constructs a search statement using proximity operators.

- 2.2.4.4 Demonstrates an understanding of the concept of nesting and constructs a search using nested words or phrases.
59
- 2.2.4.5 Demonstrates an understanding of the concept of browsing and uses an index that allows it.
- 2.2.4.6 Demonstrates an understanding of the concept of keyword searching and uses it appropriately and effectively.
8
- 2.2.4.7 Demonstrates an understanding of the concept of truncation and uses it appropriately and effectively.
15
- 2.2.5 Implements the search strategy in various information retrieval systems using different user interfaces and search engines, with different command languages, protocols, and search parameters
 - 2.2.5.1 Uses help screens and other user aids to understand the particular search structures and commands of an information retrieval system.
73
 - 2.2.5.2 Demonstrates an awareness of the fact that there may be separate interfaces for basic and advanced searching in retrieval systems.
 - 2.2.5.3 Narrows or broadens questions and search terms to retrieve the appropriate quantity of information, using search techniques such as Boolean logic, limiting, and field searching.
 - 2.2.5.4 Identifies and selects keywords and phrases to use when searching each source, recognizing that different sources may use different terminology for similar concepts.
 - 2.2.5.5 Formulates and executes search strategies to match information needs with available resources.
 - 2.2.5.6 Describes differences in searching for bibliographic records, abstracts, or full text in information sources.
- 2.2.6 Implements the search using investigative protocols appropriate to the discipline
 - 2.2.6.1 Locates major print bibliographic and reference sources appropriate to the discipline of a research topic.
 - 2.2.6.2 Locates and uses a specialized dictionary, encyclopedia, bibliography, or other common reference tool in print format for a given topic.
 - 2.2.6.3 Demonstrates an understanding of the fact that items may be grouped together by subject in order to facilitate browsing.
 - 2.2.6.4 Uses effectively the organizational structure of a typical book (e.g., indexes, tables of contents, user's instructions, legends, cross-references) in order to locate pertinent information in it.
42, 62, 89, 109, 110, 111
- 2.3 The information literate student retrieves information online or in person using a variety of methods.
 - 2.3.1 Uses various search systems to retrieve information in a variety of formats
 - 2.3.1.1 Describes some materials that are not available online or in digitized formats and must be accessed in print or other formats (e.g., microform, video, audio).
29
 - 2.3.1.2 Identifies research sources, regardless of format, that are appropriate to a particular discipline or research need.
 - 2.3.1.3 Recognizes the format of an information source (e.g., book, chapter in a book, periodical article) from its citation. (See also 2.3.2)
51
 - 2.3.1.4 Uses different research sources (e.g., catalogs and indexes) to find different types of information (e.g., books and periodical articles).
 - 2.3.1.5 Describes search functionality common to most databases regardless of differences in the search interface (e.g., Boolean logic capability, field structure, keyword searching, Relevancy ranking).
58
 - 2.3.1.6 Uses effectively the organizational structure and access points of print research sources (e.g., indexes, bibliographies) to retrieve pertinent information from those sources.

- 2.3.2 Uses various classification schemes and other systems (e.g., call number systems or indexes) to locate information resources within the library or to identify specific sites for physical exploration
34
- 2.3.2.1 Uses call number systems effectively (e.g., demonstrates how a call number assists in locating the corresponding item in the library).
25
- 2.3.2.2 Explains the difference between the library catalog and a periodical index.
1, 22
- 2.3.2.3 Describes the different scopes of coverage found in different periodical indexes.
- 2.3.2.4 Distinguishes among citations to identify various types of materials (e.g., books, periodical articles, essays in anthologies). (See also 2.3.1)
40, 44, 49, 60
- 2.3.3 Uses specialized online or in person services available at the institution to retrieve information needed (e.g., interlibrary loan/document delivery, professional associations, institutional research offices, community resources, experts and practitioners)
2
- 2.3.3.1 Retrieves a document in print or electronic form.
- 2.3.3.2 Describes various retrieval methods for information not available locally.
- 2.3.3.3 Identifies the appropriate service point or resource for the particular information need.
12
- 2.3.3.4 Initiates an interlibrary loan request by filling out and submitting a form either online or in person.
- 2.3.3.5 Uses the Web site of an institution, library, organization or community to locate information about specific services.
- 2.3.4 Uses surveys, letters, interviews, and other forms of inquiry to retrieve primary information
- 2.4 The information literate student refines the search strategy if necessary.
- 2.4.1 Assesses the quantity, quality, and relevance of the search results to determine whether alternative information retrieval systems or investigative methods should be utilized
- 2.4.1.1 Determines if the quantity of citations retrieved is adequate, too extensive, or insufficient for the information need.
- 2.4.1.2 Evaluates the quality of the information retrieved using criteria such as authorship, point of view/bias, date written, citations, etc.
54
- 2.4.1.3 Assesses the relevance of information found by examining elements of the citation such as title, abstract, subject headings, source, and date of publication.
88, 90
- 2.4.1.4 Determines the relevance of an item to the information need in terms of its depth of coverage, language, and time frame.
- 2.4.2 Identifies gaps in the information retrieved and determines if the search strategy should be revised
- 2.4.3 Repeats the search using the revised strategy as necessary
- 2.5 The information literate student extracts, records, and manages the information and its sources.
- 2.5.1 Selects among various technologies the most appropriate one for the task of extracting the needed information (e.g., copy/paste software functions, photocopier, scanner, audio/visual equipment, or exploratory instruments)
- 2.5.2 Creates a system for organizing the information
- 2.5.3 Differentiates between the types of sources cited and understands the elements and correct syntax of a citation for a wide range of resources
- 2.5.3.1 Identifies different types of information sources cited in a research tool.
- 2.5.3.2 Determines whether or not a cited item is available locally and, if so, can locate it.
29, 36
- 2.5.3.3 Demonstrates an understanding that different disciplines may use different citation styles.
- 2.5.4 Records all pertinent citation information for future reference
- 2.5.5 Uses various technologies to manage the information selected and organized

Standard III

The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.

- 3.1 The information literate student summarizes the main ideas to be extracted from the information gathered.
 - 3.1.1 Reads the text and selects main ideas
 - 3.1.2 Restates textual concepts in his/her own words and selects data accurately
 - 3.1.3 Identifies verbatim material that can be then appropriately quoted

- 3.2 The information literate student articulates and applies initial criteria for evaluating both the information and its sources.
 - 3.2.1 Examines and compares information from various sources in order to evaluate reliability, validity, accuracy, authority, timeliness, and point of view or bias
 - 3.2.1.1 Locates and examines critical reviews of information sources using available resources and technologies.
 - 3.2.1.2 Investigates an author's qualifications and reputation through reviews or biographical sources.
 - 3.2.1.3 Investigates validity and accuracy by consulting sources identified through bibliographic references.
 - 3.2.1.4 Investigates qualifications and reputation of the publisher or issuing agency by consulting other information resources. (See also 3.4.5)
 - 3.2.1.5 Determines when the information was published (or knows where to look for a source's publication date).
 - 3.2.1.6 Recognizes the importance of timeliness or date of publication to the value of the source.
 - 3.2.1.7 Determines if the information retrieved is sufficiently current for the information need.
 - 3.2.1.8 Demonstrates an understanding that other sources may provide additional information to either confirm or question point of view or bias.
124
 - 3.2.2 Analyzes the structure and logic of supporting arguments or methods
 - 3.2.3 Recognizes prejudice, deception, or manipulation
 - 3.2.3.1 Demonstrates an understanding that information in any format reflects an author's, sponsor's, and/or publisher's point of view.
 - 3.2.3.2 Demonstrates an understanding that some information and information sources may present a one-sided view and may express opinions rather than facts.
65, 83
 - 3.2.3.3 Demonstrates an understanding that some information and sources may be designed to trigger emotions, conjure stereotypes, or promote support for a particular viewpoint or group.
85, 86, 87, 91, 92
 - 3.2.3.4 Applies evaluative criteria to information and its source (e.g., author's expertise, currency, accuracy, point of view, type of publication or information, sponsorship).
 - 3.2.3.5 Searches for independent verification or corroboration of the accuracy and completeness of the data or representation of facts presented in an information source.
83
 - 3.2.4 Recognizes the cultural, physical, or other context within which the information was created and understands the impact of context on interpreting the information
 - 3.2.4.1 Describes how the age of a source or the qualities characteristic of the time in which it was created may impact its value.
 - 3.2.4.2 Describes how the purpose for which information was created affects its usefulness.
 - 3.2.4.3 Describes how cultural, geographic, or temporal contexts may unintentionally bias information.

- 3.3 The information literate student synthesizes main ideas to construct new concepts.
 - 3.3.1 Recognizes interrelationships among concepts and combines them into potentially useful primary statements with supporting evidence

- 3.3.2 Extends initial synthesis, when possible, at a higher level of abstraction to construct new hypotheses that may require additional information
- 3.3.3 Utilizes computer and other technologies (e.g., spreadsheets, databases, multimedia, and audio or visual equipment) for studying the interaction of ideas and other phenomena
- 3.4 The information literate student compares new knowledge with prior knowledge to determine the value added, contradictions, or other unique characteristics of the information.
 - 3.4.1 Determines whether information satisfies the research or other information need
 - 3.4.2 Uses consciously selected criteria to determine whether the information contradicts or verifies information used from other sources
 - 3.4.3 Draws conclusions based upon information gathered
 - 3.4.4 Tests theories with discipline-appropriate techniques (e.g., simulators, experiments)
 - 3.4.5 Determines probable accuracy by questioning the source of the data, the limitations of the information gathering tools or strategies, and the reasonableness of the conclusions
 - 3.4.5.1 Describes how the reputation of the publisher affects the quality of the information source. (See also 3.2.1).
 - 3.4.5.2 Determines when a single search strategy may not fit a topic precisely enough to retrieve sufficient relevant information.
28
 - 3.4.5.3 Determines when some topics may be too recent to be covered by some standard tools (e.g., a periodicals index) and when information on the topic retrieved by less authoritative tools (e.g., a Web search engine) may not be reliable.
38, 77
 - 3.4.5.4 Compares new information with own knowledge and other sources considered authoritative to determine if conclusions are reasonable.
 - 3.4.6 Integrates new information with previous information or knowledge
 - 3.4.7 Selects information that provides evidence for the topic
 - 3.4.7.1 Describes why not all information sources are appropriate for all purposes (e.g., ERIC is not appropriate for all topics, such as business topics; the Web may not be appropriate for a local history topic).
18
 - 3.4.7.2 Distinguishes among various information sources in terms of established evaluation criteria (e.g., content, authority, currency).
 - 3.4.7.3 Applies established evaluation criteria to decide which information sources are most appropriate.
- 3.5 The information literate student determines whether the new knowledge has an impact on the individual's value system and takes steps to reconcile differences.
 - 3.5.1 Investigates differing viewpoints encountered in the literature
124
 - 3.5.2 Determines whether to incorporate or reject viewpoints encountered
- 3.6 The information literate student validates understanding and interpretation of the information through discourse with other individuals, subject-area experts, and/or practitioners.
 - 3.6.1 Participates in classroom and other discussions
 - 3.6.2 Participates in class-sponsored electronic communication forums designed to encourage discourse on the topic (e.g., email, bulletin boards, chat rooms)
 - 3.6.3 Seeks expert opinion through a variety of mechanisms (e.g., interviews, email, listservs)
- 3.7 The information literate student determines whether the initial query should be revised.
 - 3.7.1 Determines if original information need has been satisfied or if additional information is needed
 - 3.7.2 Reviews search strategy and incorporates additional concepts as necessary
 - 3.7.2.1 Demonstrates how searches may be limited or expanded by modifying search terminology or logic.
 - 3.7.3 Reviews information retrieval sources used and expands to include others as needed
 - 3.7.3.1 Examines footnotes and bibliographies from retrieved items to locate additional sources.

- 3.7.3.2 Follows, retrieves and evaluates relevant online links to additional sources.
- 3.7.3.3 Incorporates new knowledge as elements of revised search strategy to gather additional information.

Standard IV

The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.

- 4.1 The information literate student applies new and prior information to the planning and creation of a particular product or performance.
 - 4.1.1 Organizes the content in a manner that supports the purposes and format of the product or performance (e.g., outlines, drafts, storyboards)
 - 4.1.2 Articulates knowledge and skills transferred from prior experiences to planning and creating the product or performance
 - 4.1.3 Integrates the new and prior information, including quotations and paraphrasings, in a manner that supports the purposes of the product or performance
 - 4.1.4 Manipulates digital text, images, and data, as needed, transferring them from their original locations and formats to a new context
- 4.2 The information literate student revises the development process for the product or performance.
 - 4.2.1 Maintains a journal or log of activities related to the information seeking, evaluating, and communicating process
 - 4.2.2 Reflects on past successes, failures, and alternative strategies
- 4.3 The information literate student communicates the product or performance effectively to others.
 - 4.3.1 Chooses a communication medium and format that best supports the purposes of the product or performance and the intended audience
 - 4.3.2 Uses a range of information technology applications in creating the product or performance
 - 4.3.3 Incorporates principles of design and communication
 - 4.3.4 Communicates clearly and with a style that supports the purposes of the intended audience

Standard V

The information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally.

- 5.1 The information literate student understands many of the ethical, legal and socio-economic issues surrounding information and information technology.
 - 5.1.1 Identifies and discusses issues related to privacy and security in both the print and electronic environments
136
 - 5.1.2 Identifies and discusses issues related to free vs. fee-based access to information
 - 5.1.2.1 Demonstrates an understanding that not all information on the Web is free, i.e., some Web-based databases require users to pay a fee or to subscribe in order to retrieve full text or other content.
 - 5.1.2.2 Demonstrates awareness that the library pays for access to databases, information tools, full-text resources, etc., and may use the Web to deliver them to its clientele.
 - 5.1.2.3 Describes how the terms of subscriptions or licenses may limit their use to a particular clientele or location.
 - 5.1.2.4 Describes the differences between the results of a search using a general Web search engine (e.g., Yahoo, Google) and a library-provided tool (e.g., Web-based article index, full-text electronic journal, Web-based library).
75, 81
 - 5.1.3 Identifies and discusses issues related to censorship and freedom of speech
122, 133, 134

- 5.1.4 Demonstrates an understanding of intellectual property, copyright, and fair use of copyrighted material
80, 115, 117, 130, 131, 132, 135, 137

- 5.2 The information literate student follows laws, regulations, institutional policies, and etiquette related to the access and use of information resources.
 - 5.2.1 Participates in electronic discussions following accepted practices (e.g. "Netiquette")
 - 5.2.2 Uses approved passwords and other forms of ID for access to information resources
 - 5.2.3 Complies with institutional policies on access to information resources
 - 5.2.4 Preserves the integrity of information resources, equipment, systems and facilities
 - 5.2.5 Legally obtains, stores, and disseminates text, data, images, or sounds
112, 113, 114, 118, 119,
 - 5.2.6 Demonstrates an understanding of what constitutes plagiarism and does not represent work attributable to others as his/her own
116, 119
 - 5.2.7 Demonstrates an understanding of institutional policies related to human subjects research
120

- 5.3 The information literate student acknowledges the use of information sources in communicating the product or performance.
 - 5.3.1 Selects an appropriate documentation style and uses it consistently to cite sources
 - 5.3.1.1 Describes how to use a documentation style to record bibliographic information from an item retrieved through research.
 - 5.3.1.2 Identifies citation elements for information sources in different formats (e.g., book, article, television program, Web page, interview).
 - 5.3.1.3 Demonstrates an understanding that there are different documentation styles, published or accepted by various groups (1).
 - 5.3.1.4 Demonstrates an understanding that the appropriate documentation style may vary by discipline (e.g., MLA for English, University of Chicago for history, APA for psychology, CBE for biology)
 - 5.3.1.5 Describes when the format of the source cited may dictate a certain citation style.
 - 5.3.1.6 Uses correctly and consistently the citation style appropriate to a specific discipline.
 - 5.3.1.7 Locates information about documentation styles either in print or electronically, e.g., through the library's Web site.
 - 5.3.1.8 Recognizes that consistency of citation format is important, especially if a course instructor has not required a particular style.
123
 - 5.3.2 Posts permission granted notices, as needed, for copyrighted material

APPENDIX F

Project SAILS Skills Sets

Skill Set 1: Developing a Topic

(Item numbers: 33, 95)

Objectives and item numbers

- 1.1.4.1 Identifies an initial question that might be too broad or narrow, as well as one that is probably manageable.
- 1.1.4.2 Explains his/her reasoning regarding the manageability of a topic with reference to available information sources.
- 1.1.4.3 Narrows a broad topic and broadens a narrow one by modifying the scope or direction of the question.
- 1.1.4.5 Uses background information sources effectively to gain an initial understanding of the topic.
95
- 1.1.4.6 Consults with the course instructor and librarians to develop a manageable focus for the topic.
33
- 1.1.5.3 Decides when a research topic has multiple facets or may need to be put into a broader context.

Skill Set 2: Scholarly Communication / Structure of Disciplines

(Item numbers 38, 46, 63, 69, 76, 84, 121)

Objectives and item numbers

- 1.2.1.1 Describes the publication cycle appropriate to the discipline of a research topic.
- 1.2.1.2 Defines the "invisible college" (e.g., personal contacts, listservs specific to a discipline or subject) and describes its value.
46
- 1.2.2.1 Names the three major disciplines of knowledge (humanities, social sciences, sciences) and some subject fields that comprise each discipline.
69, 76, 84, 121
- 1.2.2.4 Describes how the publication cycle in a particular discipline or subject field affects the researcher's access to information.
38, 63

Skill Set 3: Identifies and Distinguishes Among Types of Sources

(Item numbers 11, 17, 35, 48, 50, 96, 97, 98, 99, 100, 101, 102, 125, 126, 127, 128, 129)

Objectives and item numbers

- 1.2.3.1 Identifies various formats in which information is available.
50
- 1.2.5.1 Describes how various fields of study define primary and secondary sources differently.
99, 100, 101, 102
- 1.2.5.2 Identifies characteristics of information that make an item a primary or secondary source in a given field.
11, 17, 35, 48, 96, 97, 98
- 2.2.2.4 Identifies keywords that describe an information source (e.g., book, journal article, magazine article, Web site).
125, 126, 127, 128, 129

Skill Set 4: Selecting Finding Tools: Identifying types, purposes and scopes of coverage for finding tools and selecting them based on that information

(Item numbers 1, 3, 19, 22, 55, 57, 64, 77, 94, 139, 140, 141, 142, 143, 144, 145)

Objectives and item numbers

- 1.1.3.2 Demonstrates when it is appropriate to use a general and subject-specific information source (e.g., to provide an overview, to give ideas on terminology).
64
- 2.1.3 Investigates the scope, content, and organization of information retrieval systems
55
- 2.1.3.4 Distinguishes among indexes, online databases, and collections of online databases, as well as gateways to different databases and collections.
1, 19, 22
- 2.1.3.5 Selects appropriate tools (e.g., indexes, online databases) for research on a particular topic.
3, 94
- 2.1.3.6 Identifies the differences between freely available Internet search tools and subscription or fee-based databases.
57, 139, 140, 141, 142, 143, 144, 145
- 2.1.3.8 Determines the period of time covered by a particular source.
- 2.1.3.9 Identifies the types of sources that are indexed in a particular database or index (e.g., an index that covers newspapers or popular periodicals versus a more specialized index to find scholarly literature).
- 2.1.3.10 Demonstrates when it is appropriate to use a single tool (e.g., using only a periodical index when only periodical articles are required).
- 2.2.6.1 Locates major print bibliographic and reference sources appropriate to the discipline of a research topic.
- 2.2.6.2 Locates and uses a specialized dictionary, encyclopedia, bibliography, or other common reference tool in print format for a given topic.
- 2.3.1.2 Identifies research sources, regardless of format, that are appropriate to a particular discipline or research need.
- 2.3.1.4 Uses different research sources (e.g., catalogs and indexes) to find different types of information (e.g., books and periodical articles).
- 2.3.2.2 Explains the difference between the library catalog and a periodical index.
1, 22
- 2.3.2.3 Describes the different scopes of coverage found in different periodical indexes.
- 3.4.5.3 Determines when some topics may be too recent to be covered by some standard tools (e.g., a periodicals index) and when information on the topic retrieved by less authoritative tools (e.g., a Web search engine) may not be reliable.
77

Skill Set 5. Selecting Search Terms

(Item numbers 4, 16, 43, 53)

Objectives and item numbers

- 1.1.5.1 Lists terms that may be useful for locating information on a topic.
43
- 1.1.5.2 Identifies and uses appropriate general or subject-specific sources to discover terminology related to an information need.
- 1.1.5.4 Identifies more specific concepts that comprise a research topic.
- 1.2.2.2 Finds sources that provide relevant subject field- and discipline-related terminology.
- 1.2.2.3 Uses relevant subject- and discipline-related terminology in the information research process.
- 2.2.2.1 Identifies keywords or phrases that represent a topic in general sources (e.g., library catalog, periodical index, online source) and in subject-specific sources.
- 2.2.2.2 Demonstrates an understanding that different terminology may be used in general sources and subject-specific sources.

- 2.2.2.3 Identifies alternate terminology, including synonyms, broader or narrower words and phrases that describe a topic.
- 2.2.3.1 Uses background sources (e.g., encyclopedias, handbooks, dictionaries, thesauri, textbooks) to identify discipline-specific terminology that describes a given topic.
- 2.2.3.2 Explains what controlled vocabulary is and why it is used.
4, 16, 53
- 2.2.3.3 Identifies search terms likely to be useful for a research topic in relevant controlled vocabulary lists.
- 2.2.3.4 Identifies when and where controlled vocabulary is used in a bibliographic record, and then successfully searches for additional information using that vocabulary.
53
- 2.2.5.4 Identifies and selects keywords and phrases to use when searching each source, recognizing that different sources may use different terminology for similar concepts.
- 3.7.2.1 Demonstrates how searches may be limited or expanded by modifying search terminology or logic.

Skill Set 6. Constructing the Search

(Item numbers 7, 8, 14, 15, 21, 24, 32, 39, 56, 59, 61, 107, 108)

Objectives and item numbers

- 2.2.4.1 Demonstrates when it is appropriate to search a particular field (e.g., title, author, subject).
7, 14, 21
- 2.2.4.2 Demonstrates an understanding of the concept of Boolean logic and constructs a search statement using Boolean operators.
14, 21, 24, 32, 39, 56, 61, 107, 108
- 2.2.4.3 Demonstrates an understanding of the concept of proximity searching and constructs a search statement using proximity operators.
- 2.2.4.4 Demonstrates an understanding of the concept of nesting and constructs a search using nested words or phrases.
59
- 2.2.4.5 Demonstrates an understanding of the concept of browsing and uses an index that allows it.
- 2.2.4.6 Demonstrates an understanding of the concept of keyword searching and uses it appropriately and effectively.
8
- 2.2.4.7 Demonstrates an understanding of the concept of truncation and uses it appropriately and effectively.
15
- 2.2.5.3 Narrows or broadens questions and search terms to retrieve the appropriate quantity of information, using search techniques such as Boolean logic, limiting, and field searching.
- 3.7.2.1 Demonstrates how searches may be limited or expanded by modifying search terminology or logic.

Skill Set 7. Database Mechanics

(Item numbers 42, 58, 62, 71, 73, 89, 109, 110, 111)

Objectives and item numbers

- 2.1.3.1 Describes the structure and components of the system or tool being used, regardless of format (e.g., index, thesaurus, type of information retrieved by the system).
- 2.1.3.2 Identifies the source of help within a given information retrieval system and uses it effectively.
71
- 2.1.3.7 Identifies and uses search language and protocols (e.g., Boolean, adjacency) appropriate to the retrieval system.
- 2.2.5.1 Uses help screens and other user aids to understand the particular search structures and commands of an information retrieval system.
73
- 2.2.5.2 Demonstrates an awareness of the fact that there may be separate interfaces for basic and advanced searching in retrieval systems.

- 2.2.5.6 Describes differences in searching for bibliographic records, abstracts, or full text in information sources.
- 2.2.6.3 Demonstrates an understanding of the fact that items may be grouped together by subject in order to facilitate browsing.
- 2.3.1.5 Describes search functionality common to most databases regardless of differences in the search interface (e.g., Boolean logic capability, field structure, keyword searching, Relevancy ranking).
58
- 2.2.6.4 Uses effectively the organizational structure of a typical book (e.g., indexes, tables of contents, user's instructions, legends, cross-references) in order to locate pertinent information in it.
42, 62, 89, 109, 110, 111
- 2.3.1.6 Uses effectively the organizational structure and access points of print research sources (e.g., indexes, bibliographies) to retrieve pertinent information from those sources.

Skill Set 8. Evaluating and Revising Search Results

(Item numbers 80, 90)

Objectives and item numbers

- 1.4.1.1 Identifies a research topic that may require revision, based on the amount of information found (or not found).
- 1.4.1.2 Identifies a topic that may need to be modified, based on the content of information found.
- 1.4.1.3 Decides when it is and is not necessary to abandon a topic depending on the success (or failure) of an initial search for information
- 2.4.1.1 Determines if the quantity of citations retrieved is adequate, too extensive, or insufficient for the information need.
- 2.4.1.3 Assesses the relevance of information found by examining elements of the citation such as title, abstract, subject headings, source, and date of publication.
88, 90
- 3.7.3.1 Examines footnotes and bibliographies from retrieved items to locate additional sources.
- 3.7.3.2 Follows, retrieves and evaluates relevant online links to additional sources.
- 3.7.3.3 Incorporates new knowledge as elements of revised search strategy to gather additional information.

Skill Set 9. Retrieves Sources

(Item numbers 2, 25, 29, 30, 36, 68, 93, 103, 104, 105, 106)

Objectives and item numbers

- 1.3.1.1 Determines if material is available immediately.
103, 104, 105, 106
- 1.3.1.2 Uses available services appropriately to obtain desired materials or alternative sources.
30, 68, 93
- 1.3.3.2 Demonstrates a general knowledge of how to obtain information that is not available immediately.
68, 93
- 1.3.3.3 Acts appropriately to obtain information within the time frame required.
68, 93
- 2.3.3 Uses specialized online or in person services available at the institution to retrieve information needed (e.g., interlibrary loan/document delivery, professional associations, institutional research offices, community resources, experts and practitioners)
2
- 2.3.1.1 Describes some materials that are not available online or in digitized formats and must be accessed in print or other formats (e.g., microform, video, audio).
29
- 2.3.2.1 Uses call number systems effectively (e.g., demonstrates how a call number assists in locating the corresponding item in the library).
25

- 2.3.3.1 Retrieves a document in print or electronic form.
- 2.3.3.2 Describes various retrieval methods for information not available locally.
- 2.3.3.4 Initiates an interlibrary loan request by filling out and submitting a form either online or in person.
- 2.5.3.2 Determines whether or not a cited item is available locally and, if so, can locate it.
29, 36

Skill Set 10. Evaluating and Selecting Sources

(Item numbers 5, 9, 18, 20, 23, 26, 27, 54, 65, 83, 85, 86, 87, 91, 92, 124, 138)

Objectives and item numbers

- 1.2.4.1 Distinguishes characteristics of information provided for different audiences.
5, 9, 20, 23, 26, 27
- 1.2.4.2 Identifies the intent or purpose of an information source (this may require use of additional sources in order to develop an appropriate context).
54
- 1.4.2.1 Demonstrates how the intended audience influences information choices.
5, 9, 20
- 1.4.2.2 Demonstrates how the desired end product influences information choices (e.g., that visual aids or audio/visual material may be needed for an oral presentation).
- 1.4.2.3 Lists various criteria, such as currency, which influence information choices.
- 2.1.4.1 Selects appropriate information sources (i.e., primary, secondary or tertiary sources) and determines their relevance for the current information need.
138
- 2.2.1.2 Describes when different types of information (e.g., primary/secondary, background/specific) may be suitable for different purposes.
- 2.4.1.2 Evaluates the quality of the information retrieved using criteria such as authorship, point of view/bias, date written, citations, etc.
54
- 2.4.1.4 Determines the relevance of an item to the information need in terms of its depth of coverage, language, and time frame.
- 3.2.1.1 Locates and examines critical reviews of information sources using available resources and technologies.
- 3.2.1.2 Investigates an author's qualifications and reputation through reviews or biographical sources.
- 3.2.1.3 Investigates validity and accuracy by consulting sources identified through bibliographic references.
- 3.2.1.4 Investigates qualifications and reputation of the publisher or issuing agency by consulting other information resources.
- 3.2.1.5 Determines when the information was published (or knows where to look for a source's publication date).
- 3.2.1.6 Recognizes the importance of timeliness or date of publication to the value of the source.
- 3.2.1.7 Determines if the information retrieved is sufficiently current for the information need.
- 3.2.1.8 Demonstrates an understanding that other sources may provide additional information to either confirm or question point of view or bias.
124
- 3.2.3.1 Demonstrates an understanding that information in any format reflects an author's, sponsor's, and/or publisher's point of view.
- 3.2.3.2 Demonstrates an understanding that some information and information sources may present a one-sided view and may express opinions rather than facts.
65, 83
- 3.2.3.3 Demonstrates an understanding that some information and sources may be designed to trigger emotions, conjure stereotypes, or promote support for a particular viewpoint or group.
85, 86, 87, 91, 92
- 3.2.3.4 Applies evaluative criteria to information and its source (e.g., author's expertise, currency, accuracy, point of view, type of publication or information, sponsorship).

- 3.2.3.5 Searches for independent verification or corroboration of the accuracy and completeness of the data or representation of facts presented in an information source.
83
- 3.2.4.1 Describes how the age of a source or the qualities characteristic of the time in which it was created may impact its value.
- 3.2.4.2 Describes how the purpose for which information was created affects its usefulness.
- 3.2.4.3 Describes how cultural, geographic, or temporal contexts may unintentionally bias information.
- 3.4.5.1 Describes how the reputation of the publisher affects the quality of the information source.
- 3.4.7.1 Describes why not all information sources are appropriate for all purposes (e.g., ERIC is not appropriate for all topics, such as business topics; the Web may not be appropriate for a local history topic).
18
- 3.4.7.2 Distinguishes among various information sources in terms of established evaluation criteria (e.g., content, authority, currency).
- 3.4.7.3 Applies established evaluation criteria to decide which information sources are most appropriate.
- 3.7.3.1 Examines footnotes and bibliographies from retrieved items to locate additional sources.

Skill Set 11. Documenting Sources

(Item numbers 34, 40, 44, 49, 51, 60, 123)

Objectives and item numbers

- 2.3.1.3 Recognizes the format of an information source (e.g., book, chapter in a book, periodical article) from its citation.
51
- 2.3.2 Uses various classification schemes and other systems (e.g., call number systems or indexes) to locate information resources within the library or to identify specific sites for physical exploration
34
- 2.3.2.4 Distinguishes among citations to identify various types of materials (e.g., books, periodical articles, essays in anthologies).
40, 44, 49, 60
- 2.5.3.1 Identifies different types of information sources cited in a research tool.
- 2.5.3.3 Demonstrates an understanding that different disciplines may use different citation styles.
- 5.3.1.1 Describes how to use a documentation style to record bibliographic information from an item retrieved through research.
- 5.3.1.2 Identifies citation elements for information sources in different formats (e.g., book, article, television program, Web page, interview).
- 5.3.1.3 Demonstrates an understanding that there are different documentation styles, published or accepted by various groups.
- 5.3.1.4 Demonstrates an understanding that the appropriate documentation style may vary by discipline (e.g., MLA for English, University of Chicago for history, APA for psychology, CBE for biology)
- 5.3.1.6 Uses correctly and consistently the citation style appropriate to a specific discipline.
- 5.3.1.7 Locates information about documentation styles either in print or electronically, e.g., through the library's Web site.
- 5.3.1.8 Recognizes that consistency of citation format is important, especially if a course instructor has not required a particular style.
123

Skill Set 12. Economic, Legal, and Social Issues -- Other than citation

(Item numbers 75, 80, 81, 112, 113, 114, 115, 116, 117, 118, 119, 120, 122, 130, 131, 132, 133, 134, 135, 136, 137)

Objectives and item numbers

- 5.1.1 Identifies and discusses issues related to privacy and security in both the print and electronic environments
136
- 5.1.2.1 Demonstrates an understanding that not all information on the Web is free, i.e., some Web-based databases require users to pay a fee or to subscribe in order to retrieve full text or other content.
- 5.1.2.2 Demonstrates awareness that the library pays for access to databases, information tools, full-text resources, etc., and may use the Web to deliver them to its clientele.
- 5.1.2.3 Describes how the terms of subscriptions or licenses may limit their use to a particular clientele or location.
- 5.1.2.4 Describes the differences between the results of a search using a general Web search engine (e.g., Yahoo, Google) and a library-provided tool (e.g., Web-based article index, full-text electronic journal, Web-based library).
75, 81
- 5.1.3 Identifies and discusses issues related to censorship and freedom of speech
122, 133, 134
- 5.1.4 Demonstrates an understanding of intellectual property, copyright, and fair use of copyrighted material
80, 115, 117, 130, 131, 132, 135, 137
- 5.2.1 Participates in electronic discussions following accepted practices (e.g. "Netiquette")
- 5.2.2 Uses approved passwords and other forms of ID for access to information resources
- 5.2.3 Complies with institutional policies on access to information resources
- 5.2.4 Preserves the integrity of information resources, equipment, systems and facilities
- 5.2.5 Legally obtains, stores, and disseminates text, data, images, or sounds
112, 113, 114, 118, 119
- 5.2.6 Demonstrates an understanding of what constitutes plagiarism and does not represent work attributable to others as his/her own
116, 119
- 5.2.7 Demonstrates an understanding of institutional policies related to human subjects research
120

Skill Set 13. Miscellaneous / Stand Alone Objectives

(Item numbers 10, 12, 28, 67)

Objectives and item numbers

- 1.1 The information literate student defines and articulates the need for information.
10
- 1.2.3.2 Demonstrates how the format in which information appears may affect its usefulness for a particular information need.
- 2.3.3.3 Identifies the appropriate service point or resource for the particular information need.
12
- 2.3.3.5 Uses the Web site of an institution, library, organization or community to locate information about specific services.
- 3.4.5.2 Determines when a single search strategy may not fit a topic precisely enough to retrieve sufficient relevant information.
28
- 2.2.1.1 Describes a general process for searching for information.
67

Skill Set 14. Not Yet Clustered

(no items)

Outcomes and objectives

- 1.1.1. Confers with instructors and participates in class discussions, peer workgroups, and electronic discussions to identify a research topic, or other information need
- 1.1.2. Develops a thesis statement and formulates questions based on the information need
- 1.1.3.1 Describes the difference between general and subject-specific information sources.
- 1.1.4.4 Demonstrates an understanding of how the desired end product (i.e., the required depth of investigation and analysis) will play a role in determining the need for information.
- 1.1.6 Recognizes that existing information can be combined with original thought, experimentation, and/or analysis to produce new information
- 1.2.6 Realizes that information may need to be constructed with raw data from primary sources
- 1.3.2 Considers the feasibility of acquiring a new language or skill (e.g., foreign or discipline-based) in order to gather needed information and to understand its context
- 1.3.3.1 Searches for and gathers information based on an informal, flexible plan.

- 2.1.1 Identifies appropriate investigative methods (e.g., laboratory experiment, simulation, fieldwork)
- 2.1.2 Investigates benefits and applicability of various investigative methods
- 2.1.3.3 Identifies what types of information are contained in a particular system (e.g., all branch libraries are included in the catalog; not all databases are full text; catalogs, periodical databases, and Web sites may be included in a gateway).
- 2.1.3.11 Distinguishes between full-text and bibliographic databases.
- 2.1.4.2 Determines appropriate means for recording or saving the desired information (e.g., printing, saving to disc, photocopying, taking notes).
- 2.1.4.3 Analyzes and interprets the information collected using a growing awareness of key terms and concepts to decide whether to search for additional information or to identify more accurately when the information need has been met.
- 2.2.1.1 Describes a general process for searching for information.
- 2.2.1.3 Gathers and evaluates information and appropriately modifies the research plan as new insights are gained.
- 2.5.1 Selects among various technologies the most appropriate one for the task of extracting the needed information (e.g., copy/paste software functions, photocopier, scanner, audio/visual equipment, or exploratory instruments)
- 2.5.2 Creates a system for organizing the information
- 2.5.5 Uses various technologies to manage the information selected and organized
- 3.1.1 Reads the text and selects main ideas
- 3.1.2 Restates textual concepts in his/her own words and selects data accurately
- 3.1.3 Identifies verbatim material that can be then appropriately quoted
- 3.2.2 Analyzes the structure and logic of supporting arguments or methods
- 3.3.1 Recognizes interrelationships among concepts and combines them into potentially useful primary statements with supporting evidence
- 3.3.2 Extends initial synthesis, when possible, at a higher level of abstraction to construct new hypotheses that may require additional information
- 3.3.3 Utilizes computer and other technologies (e.g., spreadsheets, databases, multimedia, and audio or visual equipment) for studying the interaction of ideas and other phenomena
- 3.4.1 Determines whether information satisfies the research or other information need
- 3.4.2 Uses consciously selected criteria to determine whether the information contradicts or verifies information used from other sources
- 3.4.3 Draws conclusions based upon information gathered
- 3.4.4 Tests theories with discipline-appropriate techniques (e.g., simulators, experiments)
- 3.4.5.4 Compares new information with own knowledge and other sources considered authoritative to determine if conclusions are reasonable.
- 3.4.6 Integrates new information with previous information or knowledge
- 3.5.2 Determines whether to incorporate or reject viewpoints encountered
- 3.6.1 Participates in classroom and other discussions

- 3.6.2 Participates in class-sponsored electronic communication forums designed to encourage discourse on the topic (e.g., email, bulletin boards, chat rooms)
- 3.6.3 Seeks expert opinion through a variety of mechanisms (e.g., interviews, email, listservs)
- 5.3.1.5 Describes when the format of the source cited may dictate a certain citation style.