

WHAT ARE THE BIOLOGY INTERESTS OF SOPHOMORE HIGH SCHOOL GIRLS?

GLADYS M. RELYEA

University of Utah, Salt Lake City, Utah

PROBLEM AND PROCEDURE

What interest in biology do sophomore girls possess when they enter upon a year of general biology in a city high school? What topics and activities which have biology as their keynote do the girls find of most interest? Are plants more interesting to them than animals, diseases of man more interesting than diseases of other animals, quiet activities more interesting than active ones? These and other questions were answered by one hundred twenty-seven girls in the sophomore class of a city high school with a total pupil population of fifteen hundred. These girls constituted 18 per cent of all girls in the school, 42 per cent of all girls in the sophomore class, and 70 per cent of all girls taking general biology.

The girls came from three types of environment; 41 from a factory section of the city, 72 from what might be called a middle-class residential section, and 14 from a definitely rural section. Over half of the girls had one or both parents born outside of the United States. The range of ages was from 13 to 18, with the greatest number at 15. The I.Q. range was from 78 to 155. There were 32 girls having I.Q.'s between 120 and 155; 56 between 100 and 119; and 39 between 78 and 99. Most of the girls had pursued general science in the junior high school and all but three had taken the course with the same teacher. Seventy-four had received a final mark of 85 or above in this course. The girls were quite equally distributed in the college, general, and commercial curricula. The vocational objectives were varied; 43 were aiming toward the arts and professions, other than scientific; 49 toward some scientific vocation; 22 toward commercial vocations; and the others toward such positions as hairdresser,

mortician, and dressmaker. Their camping experience was fairly extensive: 56 had had at least a week in a Girl Scout, private, or family camp, and most of the others had had some briefer experience in camp life. Their country experience, too, was richer than might be expected; 31 had lived more than two months in the country; 14 had lived all or most of their lives in the country, and practically all of the others had had at least a week in the country. Almost two-thirds of the group had at some time taken care of a garden. All but three had had at least one pet. Many of the girls had had five or six different sorts of pets, such as alligators, canaries, cats, dogs, skunks, and guinea-pigs. Only ten had never made a collection of any kind. Many had made collections of several types, such as flowers, shells, match boxes, and pictures. These facts on the background and experiences of the girls used in the study will help to give a basis for the discussion of their biology interests which follows.

The list of fifty biology activities which was distributed for marking by the girls was composed of as many different types of interests as could be found. Items were included which had a music or a literary or an art angle so that girls who had special aptitudes for these things could be reached. Items were included which would be representative of the various life experiences which the girls might be expected to have had, as well as items on subjects which they might have read about. The mimeographed sheets which were used also included a list of thirty-four subjects of a biological nature. Both of these lists were to be marked by the girls as to the amount of interest which they felt in each. Five columns were made to the right of the ac-

tivities and topics listed. These were headed as follows: "Not at all," "Slightly," "Somewhat," "Much," "Very much." The first day of the school year was given over to the filling out of these sheets, and to the obtaining of information on the girl's family background, school experience, and out-of-school activities. The teacher was unknown to most of the girls and it was made clear that the sheets had nothing to do with the course in biology for which they were registered.

For purposes of the study, numerical values of 0, 1, 2, 3, and 4 were assigned to the five headings. Summary Averages of Intensity of Interest in each item were obtained by dividing the total degrees of Interest as indicated by the girls, by 127. Also, these averages of all markings of each item, as well as the averages of Plant and Animal Interests, were changed to percentages for purposes of easier comparison. This presupposes that a marking of the column "Very much" indicated 100 per cent interest in that particular item, and of the column "Not at all" indicated zero per cent interest. Though this is not a possible condition, it serves as a useful device.

FINDINGS OF THE STUDY

The summary tables which follow give the ranking, the actual total Average of Interest, and the total Average of Interest expressed as a percentage, for each of the 84 activities and topics, as marked for degree of interest felt in each by the 127 girls used in the study.

DISCUSSION OF THE SUMMARY TABLES

What generalizations can be made from a study of the rankings of the items on these two tables? Let us examine first the fifty items of Table I. Do active types of biology activities occasion more or less interest than the less active ones? In the first twelve items, nine are of an active type; while of the last twelve items, only six are active. Are outdoor activities of more interest than indoor ones? Of the

first twelve items, eight are distinctly outdoor; while of the last twelve items, only four are outdoor. Do activities with which the girls have had actual experience occasion more interest than those about which they have only read? Of the first twelve items, only the item "Go out in glass-bottomed boat to observe undersea life" is unknown to all. Of the last twelve items, only six have been experienced by even a few of the group. Are activities in which animals are included of more interest than those in which plants are included? Of the first twelve items, only one activity is with plants only, only three with animals only. The others are of a general nature. There would seem to be little difference, then, in the amount of interest, as shown by ranking of activities, between animal and plant items on this table.

Is there a wide range of interests in this table? The camping item which ranks first on the list has an Average of Intensity of Interest of 3.236 for the 127 girls. The item ranking fiftieth, "raise animals for sale," has an Average of 0.669. There is then a difference of 2.567 between the two items; or in other words, the first ranking item is almost five times as large as the fiftieth item.

This wide range in the first table is not paralleled in the second table if only the first and last items on each table are compared. If, however, the last item of the Table of 34 Biology Topics is compared with the item ranking 34th on the Table of 50 Biology Activities, it will be seen that a range of 1.11 to 3.039 must be compared with one of 1.756 to 3.236. There is a difference of 1.929 on the Topics Table as compared with a difference of 1.480 on the Activities. Evidently, Activities are both of greater interest and of more even interest, since the range is smaller and the Averages higher, than those on the Topics table.

What generalizations can be made by an examination of the interests in biology topics shown in Table II? It will be noticed immediately that snakes and spiders

end the list. One wonders whether a group of boys would have ranked these last. Are familiar objects of greater interest in this table as they were in the first table? Of the first nine items, all are familiar; of the last nine, excepting the last two, all are of the type that most people know little about. Are plant topics of more interest than ani-

TABLE I
INTENSITY OF INTEREST IN FIFTY ACTIVITIES

<i>Rank</i>	<i>Activity</i>	<i>Average of Intensity</i>	<i>Per cent of Average Intensity</i>
1	go camping	3.236	80.9
2	go to Museums and Aquariums	3.087	77.18
3	take care of pets	2.953	73.83
4	go out in a glass-bottomed boat to observe undersea life	2.850	71.25
5	make collections of wild flowers	2.779	69.48
6	notice plants and animals while walking or riding	2.757	68.93
7.5	raise animals for fun	2.717	67.93
7.5	look at famous nature paintings	2.717	67.93
9	go on nature walks with friends	2.583	64.58
10	go hunting with a camera	2.567	64.18
11	look at pictures of plants and animals	2.559	63.98
12	go fishing	2.520	63.00
13	go hunting	2.394	59.85
14	go on nature walks with a leader	2.299	57.48
15	raise plants for fun	2.252	57.3
16.5	look for birds' nests	2.228	55.7
16.5	make collections of leaves	2.228	55.7
18	make collections of shells	2.189	54.83
19	take photographs of plants and animals	2.173	54.33
20	identify animals found	2.047	53.18
21	go to movies about plants and animals	2.126	53.15
22	identify plants found	2.094	52.35
23	earn Girl Scout nature badges	2.039	50.98
24	perform experiments with plants	1.984	49.6
25	make collections of photographs of plants and animals	1.976	49.4
26	try to recognize birds by their songs	1.960	49.0
27	travel about the country to collect plants	1.921	48.03
28	talk to people who know much about nature	1.913	47.83
29.5	make leaf-prints, plaster molds, and models of plants and animals	1.906	47.65
29.5	explore regions for new plants and animals	1.906	47.65
31	travel about the country to collect animals	1.795	44.88
32	collect newspaper clippings about plants and animals	1.787	44.68
33	draw or paint nature objects or scenes	1.764	44.10
34	listen to music which portrays nature	1.756	43.9
35	perform experiments with animals	1.717	42.93
36	make collections of mosses, ferns	1.669	40.73
37	go on nature walks alone	1.614	40.35
38	read nature stories	1.543	38.58
39	keep an accurate record of nature objects found	1.519	37.98
40	read books giving nature facts	1.402	35.05
41	breed animals other than fish	1.362	34.05
42	draw things seen under a microscope	1.354	33.85
43	read nature poems	1.339	33.48
44	make collections of animal footprints	1.315	32.88
45	illustrate a nature diary with sketches	1.299	32.48
46	breed guppies and other fish	1.094	27.35
47	raise plants for sale	0.953	23.83
48	listen to lectures about nature	0.937	23.43
49	make collections of seaweeds	0.803	20.08
50	raise animals for sale	0.669	16.73

mal topics? The first answer to this question would be affirmative, as it would have been by early educators in the United States who believed that botany was a more gentle subject for girls. But what do we find in this group of modern girls? Of the first nine items, six are animal topics; of the last nine, again excepting the snakes and spiders, three are animal topics. Thus it seems that, for this group of girls, fear

TABLE II
RANK IN INTEREST FOR THIRTY-FOUR TOPICS
IN BIOLOGY

Rank	Topic	Average	Per cent Average
1	animals as pets	3.039	75.98
2	wild flowers	2.898	72.45
3	garden flowers	2.819	70.48
4	birds as pets	2.559	63.98
5	animals in a zoo	2.433	61.85
6	birds out-of-doors	2.425	60.63
7	trees	2.409	60.23
8	human diseases	2.394	59.85
9	fish in an aquarium	2.236	55.9
10	garden plants	2.205	55.13
11	prehistoric animals	2.179	54.48
12	fish out-of-doors	2.173	54.33
13	prehistoric man	2.07	51.75
14	prehistoric plants	2.063	51.58
15	seashore life	2.039	50.98
16	wild animals	2.024	50.6
17	ferns	1.85	46.25
18	fresh-water plants	1.843	46.08
19	animal diseases, other than human	1.835	45.88
20	fresh-water animals	1.819	45.48
21	seaweeds	1.779	44.48
22	grasses	1.732	43.3
23.5	mosses	1.638	40.95
23.5	plant diseases	1.638	40.95
25	frogs, toads, salamanders	1.573	39.33
26	bacteria	1.535	38.38
27	insect pests	1.519	37.98
28	insects	1.512	37.8
29	lichens	1.386	34.65
30	mushrooms	1.315	32.88
31	molds	1.307	32.68
32	evergreens	1.283	32.08
33	snakes	1.259	31.48
34	spiders	1.11	27.75

or repugnance figures largely in the interest ratings, that familiar topics are of most interest, and that animal topics exceed plant topics in interest.

Let us consider in more detail the question of plant *versus* animal interest. For the past twenty-five years, educators have sought the answer to this question. Many studies have been made, using children from kindergarten to high school. In general, it was found that animals were of greater interest than plants, and that boys were more interested in animals than were girls. What do we find in this present study? A comparison of the 28 plant items with the 30 animal items found in the total list of 84 biology activities and topics is shown in Table III.

TABLE III
RELATIVE INTERESTS IN PLANTS AND ANIMALS

Items	Average	Average in %	Range of Averages
30 Animal Items	1.987	49.68	0.067 to 3.267
28 Plant Items..	1.812	45.27	0.036 to 3.65
84 General, Plant and Animal Items	1.945	48.63	0.048 to 3.393

Thus, once more, animal items are appreciably of more interest than plant items, a difference of 4.41 per cent. It will be remembered that in a comparison of the first twelve and the last twelve items on the biology activities summary table, there was little apparent difference in interest between plant and animal items. In the biology topics (Table II), animal topics were more frequent in the first nine items than in the last nine. In general, then, we can say that the girls in this study show slightly more interest in animals than in plants, at least as shown by their ratings on the total list of eighty-four items.