

## Newton Academy 1999 Surveys

Newton Academy is a ten-day residential summer program for female students who have completed grades 9-11. The academy integrates physics, chemistry, mathematics and engineering via a project where students build a working polymer ball factory. The program concludes with a family night.

Newton Academy is part of a program entitled *Promoting Young Women in the Physical Sciences*, funded by the National Science Foundation through grant number NSF-HRD 96-19140; M. Chandrasekhar, U. of Missouri Columbia, and R. Litherland, Columbia Public Schools, Directors.

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*(Note: The pages are not numbered, however this scheme will allow you to print selected pages, if desired)*

# Attitude Toward Science in School

Name \_\_\_\_\_

Please use this scale to answer the following questions:

- SA -- Strongly agree
- A-- Agree
- N -- Neither agree nor disagree
- D -- Disagree
- SD -- Strongly disagree

(Circle one choice)

- (1) SA A N D SD Science is fun.
- (2) SA A N D SD I do not like science and it bothers me to have to study it.
- (3) SA A N D SD During science class, I usually am interested.
- (4) SA A N D SD I would like to learn more about science.
- (5) SA A N D SD If I knew I would never go to science class again, I would feel sad.
- (6) SA A N D SD Science is interesting to me and I enjoy it.
- (7) SA A N D SD Science makes me feel uncomfortable, restless, irritable, and impatient.
- (8) SA A N D SD Science is fascinating and fun.
- (9) SA A N D SD The feeling that I have towards science is a good feeling.
- (10) SA A N D SD When I hear the word science, I have a feeling of dislike.
- (11) SA A N D SD Science is a topic which I enjoy studying.
- (12) SA A N D SD I feel at ease with science and I like it very much.
- (13) SA A N D SD I feel a definite positive reaction to science.
- (14) SA A N D SD Science is boring.

*This survey is taken from Germann, P. J. (1988). Development of the Attitude Toward Science in School Assessment and its use to investigate the relationship between science achievement and attitude toward science in school. Journal of Research in Science Teaching, 25(8), 689-703.*

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## Science Experience Survey

Name \_\_\_\_\_

Circle the word that best describes how often you have done the activities listed in the survey SINCE YOUR PARTICIPATION in the Newton Academy in July 1998. Do NOT include activities that were required as a class assignment.

1. I have read science articles in magazines.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
2. I have read science articles in newspapers.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
3. I have watched science programs on television (for example 3-2-1 Contact, NOVA, Nature, National Geographic, Discover).  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
4. I have read books about science or scientists.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
5. I have talked about science topics with my friends.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
6. I have worked on science projects (for example 4-H fair, Brownie or Girl Scout project).  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
7. I have worked with science-related hobbies.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
8. I have listened to science or medical reports on news programs.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
9. I have visited a planetarium or aquarium.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
10. I have visited a weather station.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never

*This survey is modified from Mason, C. L., & Kahle, J. B. (1988). Student attitudes toward science and science related careers: A program designed to promote a stimulating gender-free learning environment. Journal of Research in Science Teaching, 26(1), 25-39.*

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11. I have taken a tour of a recycling plant or sewage treatment plant.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
12. I have visited a natural history or science center or a nature center.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
13. I have visited a cave, mine, or rock quarry.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
14. I have visited a fish hatchery or other scientific research center.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
15. I have viewed an archaeological site.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
16. I have taken care of farm animals.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
17. I have visited the mountains.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
18. I have visited a national park, nature preserve, or wildlife refuge.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
19. I have taken a tour of an animal hospital.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
20. I have taken a tour of a hospital, medical, or dental facility.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
21. I have taken something apart to see how it works.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
22. I have performed a chemical experiment or used a chemistry set.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
23. I have looked through a telescope at the night sky.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never

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24. I have found a fossil.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
25. I have fixed something mechanical (for example, a bicycle).  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
26. I have fixed something electrical.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
27. I have played with objects found in nature (for example, rocks, water, made a whistle from a blade of grass, or made leaf rubbings with crayon and paper).  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
28. I have viewed a solar or lunar eclipse.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
29. I have helped someone work on a car (for example, changing the oil, adding water to the radiator).  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
30. I have made model rockets, cars, or airplanes.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never
31. I have used LEGO or similar equipment.  
A) Frequently                      B) Fairly Often                      C) Seldom    D) Never

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# Science Course Selection Survey

Name \_\_\_\_\_

The purpose of this questionnaire is to help people determine what type of subjects interest people your age. The questionnaire is not a test and there are no wrong or right answers.

Pretend that you can select up to 8 subjects to study during high school. After reading the list, mark your choices by placing a 1,2,3,4,5,6,7,and 8 in the spaces below with 1 being first choice followed by 2 for your next choice, 3 for next choice and continue up to your eighth choice.

- |  |                                     |
|--|-------------------------------------|
| _____ Botany (the study of plants)     | _____ Chemistry                     |
| _____ Painting                         | _____ Architecture                  |
| _____ Engineering (Robotics)           | _____ Foreign Language              |
| _____ Zoology (study of animals)       | _____ Law                           |
| _____ Sculpture (molding clay)         | _____ Aviation/Aerospace            |
| _____ Debating class                   | _____ Physics                       |
| _____ Instrumental Music               | _____ Geology (study of the earth)  |
| _____ Drama class                      | _____ Computer math and Engineering |
| _____ Literature                       | _____ Writer's Workshop             |
| _____ Computer Graphics                | _____ Astronomy                     |
| _____ The Stock Market Game (Business) | _____ Ancient Civilizations         |

List additional subjects that you would like to study on the lines below.

_____	_____
_____	_____
_____	_____

*This survey is taken from Farenga, S. J. (1995). Out-of-school science-related experiences, science attitudes, and selection of science mini-courses in high ability, upper elementary students. Unpublished PhD dissertation.*

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## Demographic Questionnaire

Do **not** put your name on this questionnaire.

(1) What is your age? \_\_\_\_\_

(2) What is your race/ ethnicity?

\_\_\_\_\_ Black/ African American      \_\_\_\_\_ Asian/ Asian American

\_\_\_\_\_ White/ European American      \_\_\_\_\_ Hispanic/ Hispanic American

\_\_\_\_\_ Native American      \_\_\_\_\_ Biracial: Please specify- \_\_\_\_\_

\_\_\_\_\_ Other: Please specify- \_\_\_\_\_

(3) What grade in school did you complete in May/June 1999? \_\_\_\_\_

(4) What school did you attend during the 1998-1999 school year?

\_\_\_\_\_

(5) What number child are you in your family? (example: 1<sup>st</sup> out of 3 children)

\_\_\_\_\_

(6) Mother's Education: (check highest level completed)

\_\_\_\_\_ Some high school      \_\_\_\_\_ (4-year) College graduate

\_\_\_\_\_ High school graduate      \_\_\_\_\_ Some graduate school

\_\_\_\_\_ Vocational/ Technical School Training      \_\_\_\_\_ Master's Degree

\_\_\_\_\_ Some college      \_\_\_\_\_ Doctorate Degree: Ph.D./ Medical Degree: M.D./ Law Degree: J.D.

\_\_\_\_\_ (2-year) College graduate

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(7) Does your mother:

\_\_\_ Work Full-time

\_\_\_ Work Part-time

\_\_\_ Not Work Outside the Home

(8) What is your mother's job/ occupation? \_\_\_\_\_

(9) Father's Education: (check highest level completed)

\_\_\_ Some high school

\_\_\_ (4-year) College graduate

\_\_\_ High school graduate

\_\_\_ Some graduate school

\_\_\_ Vocational/ Technical School Training

\_\_\_ Master's Degree

\_\_\_ Some college

\_\_\_ Doctorate Degree: Ph.D./ Medical  
Degree: M.D./ Law Degree: J.D.

\_\_\_ (2-year) College graduate

(10) Does your father:

\_\_\_ Work Full-time

\_\_\_ Work Part-time

\_\_\_ Not Work Outside the Home

(10) What is your father's job/ occupation? \_\_\_\_\_

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## Science Questionnaire

How much confidence do you have about doing each of the behaviors listed below? If you have not had physics or another course, predict your confidence level. Circle the letters that best represent your beliefs.

A                      B                      C                      D                      E  
quite a lot ←-----→ very little  
CONFIDENCE

- |   |   |   |   |   |  |
|---|---|---|---|---|--|
| A | B | C | D | E | 1. Using a computer in science classes.                |
| A | B | C | D | E | 2. Understanding concepts in a biology textbook.       |
| A | B | C | D | E | 3. Using chemical formulas and equations.              |
| A | B | C | D | E | 4. Doing well on a biology exam.                       |
| A | B | C | D | E | 5. Doing chemistry homework problems well.             |
| A | B | C | D | E | 6. Doing physics lab experiments well.                 |
| A | B | C | D | E | 7. Using a microscope.                                 |
| A | B | C | D | E | 8. Lighting a laboratory (Bunsen) burner.              |
| A | B | C | D | E | 9. Winning a science fair award for a biology project. |
| A | B | C | D | E | 10. Handling laboratory chemicals.                     |
| A | B | C | D | E | 11. Doing physics homework problems well.              |
| A | B | C | D | E | 12. Taking essay tests in biology.                     |
| A | B | C | D | E | 13. Performing lab experiments using electricity.      |
| A | B | C | D | E | 14. Getting good grades in biology.                    |
| A | B | C | D | E | 15. Answering questions in biology class.              |
| A | B | C | D | E | 16. Asking questions in chemistry class.               |
| A | B | C | D | E | 17. Memorizing factual information.                    |
| A | B | C | D | E | 18. Understanding concepts in a chemistry textbook.    |

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A                      B                      C                      D                      E  
 quite a lot ←-----→ very little  
 CONFIDENCE

- |   |   |   |   |   |  |
|---|---|---|---|---|--|
| A | B | C | D | E | 19. Asking questions in biology class.               |
| A | B | C | D | E | 20. Learning about famous scientists.                |
| A | B | C | D | E | 21. Understanding concepts in a physics textbook.    |
| A | B | C | D | E | 22. Getting good grades in chemistry.                |
| A | B | C | D | E | 23. Understanding abstract chemical concepts.        |
| A | B | C | D | E | 24. Asking questions in physics class.               |
| A | B | C | D | E | 25. Getting good grades in physics.                  |
| A | B | C | D | E | 26. Performing lab experiments with simple machines. |
| A | B | C | D | E | 27. Doing science activities for fun.                |

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## Science Careers and Family Responsibility Scale

The purpose of this questionnaire is to assess student attitudes toward science careers and family responsibilities. This questionnaire is not a test and there are no right or wrong answers.

Please read each statement carefully and then respond using the following scale:

SA = Strongly Agree  
A = Agree  
N = Neither Agree nor Disagree  
D = Disagree  
SD = Strongly Disagree

- |    |   |   |   |    |  |
|----|---|---|---|----|--|
| SA | A | N | D | SD | (1) It is very difficult for a woman to combine a career as a scientist and with a family life.  |
| SA | A | N | D | SD | (2) If a woman chemist or physicist takes time away from her career to have children, she will never catch up again.   |
| SA | A | N | D | SD | (3) A woman who is really dedicated to a career in science or mathematics would not be able to devote much time or energy to her family.   |
| SA | A | N | D | SD | (4) Both women and men can find the time they need for the concentrated work that a career in mathematics and science requires, even if they are involved in an intimate relationship (with a nonscientist). |
| SA | A | N | D | SD | (5) A woman who is considering a career as a mathematician or scientist should probably not plan to have children.   |
| SA | A | N | D | SD | (6) For women, there is nothing incompatible about planning both a family and a top-level scientific career.   |
| SA | A | N | D | SD | (7) Most women who are scientists find that, with a little ingenuity and support, they can happily combine their career with having a family.  |

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N. Dorm life

1	2	3	4	5	6	7	8
didn't like							loved it!!!

**Comments:**

O. College Instructors, Counselors, and Teachers

1	2	3	4	5	6	7	8
not helpful							very helpful

**Comments:**

P. General Organization of Newton Academy

1	2	3	4	5	6	7	8
not very organized							very well organized

**Comments:**

Q. Overall Rating of your Newton Academy Experience

1	2	3	4	5	6	7	8
didn't like							loved it!!!

**Comments:**

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