

March 25, 2004

SUMMARY REPORT: AskNSDL - ESTME Week (March 15 – 19, 2004) plus data from March 20-24, 2004

I. Overview

Excellence in Science, Technology and Mathematics Education Week took place March 15-19, 2004. AskNSDL provided a virtual reference forum through which students, teachers and NSDL patrons could ask questions on topics in Education, Health, Mathematics, Science and Technology. Experts from across the United States, as well as Canada, Australia, the United Kingdom, Malaysia and Kuala Lumpur, registered with AskNSDL to provide answers to students in their fields of expertise.

The flurry of questions submitted to AskNSDL during the five days of ESTME Week continued for five days afterwards. More than 500 questions were posed to AskNSDL experts during these ten days from March 15th through March 24th. They arrived in every major category: Education, Health, Mathematics, Science, Social Science, and Technology. The combined expertise of volunteers ensured that no question was an “orphan,” which belonged to a category without an expert who could potentially answer it.

The following summary provides a description of the information gleaned from the tables of “Experts” and “Questions” in the AskNSDL database dated March 24, 2004. The analysis begins with the demographic composition of the experts who signed up to volunteer for ESTME week through the AskNSDL website from January 1, 2004 through March 24, 2004. Data is provided for country, state (within the United States), and the institutional domain with which experts were affiliated. Where possible, the specific organizations of the experts are noted. Finally, the subject coverage of the base of experts is presented.

Part III of this report considers the question activity at AskNSDL from March 15-24. Table 6 presents a broad overview of the major categories in which questions were classified. A more detailed description follows in which analysis looks at subject sub-category and audience level of the patron groups who submitted questions. Section C of this study of AskNSDL question activity provides information gleaned from the system’s Reports on “Hot Topics.”

This summary closes with several comments from patrons and experts received to date on the experience of ESTME Week and using the AskNSDL virtual information service.

The BIG picture:

- # of Experts Registered: 311
- # of Patrons: (derived from AskNSDL Reports) who submitted questions: 163
- # of Questions Asked (derived from Questions Table in AskNSDL database): 571

II. EXPERTS: Total Number of experts registered (01/06/04-03/24/04): 311

A. Country: This information comes from the AskNSDL database table, “Experts.”

The majority of experts claimed the United States in the field for “country,” although a significant number of experts did not provide this information in their registration profile.

- United States: 199
- Foreign Country: 7
- Not given: 105

Table 1: Countries entered by experts on their AskNSDL registration profiles

Country of Expert	Total
Not given	105
Australia	1
CA	3
Malaysia	1
Sri Lanka	1
UK	1
USA	199
Grand Total	311

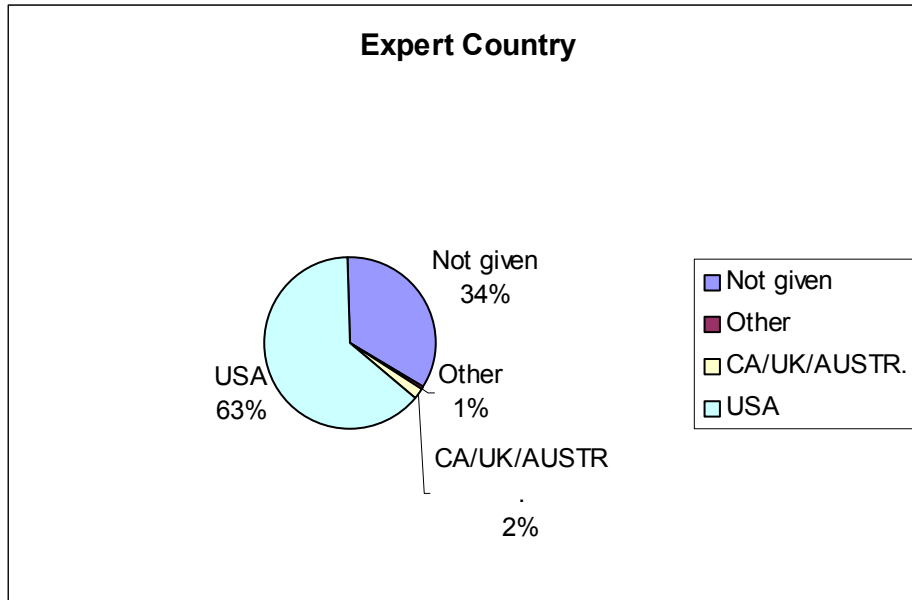


Figure 1: Distribution of experts by country

B. State: This information comes from the AskNSDL database table, “Experts.” Within the U.S.A., experts represented 40 of 50 states (although a significant percentage of experts did not provide this information.) The top five states were: California, Colorado, Texas, Virginia and Florida/New York (tie.)

Table 2: Distribution of Experts within the United States

USA Experts States	Total
CA	19
CO	18
TX	16
VA	15
FL	10
NY	10
MN	9
MD	8
PA	8
MA	7
VT	7
AZ	5
NJ	5
OH	5
SC	5
DC	4
GA	4
WA	4
HI	3
IL	4
MI	3
NM	3
TN	3
Arkansas	2
KS	2
LA	2
MO	2
NC	2
OR	2
WI	2
Not given	1
Alabama	1
CT	1
DE	1
ID	1
IN	1
MS	1
NV	1
OK	1
UT	1
Grand Total	199

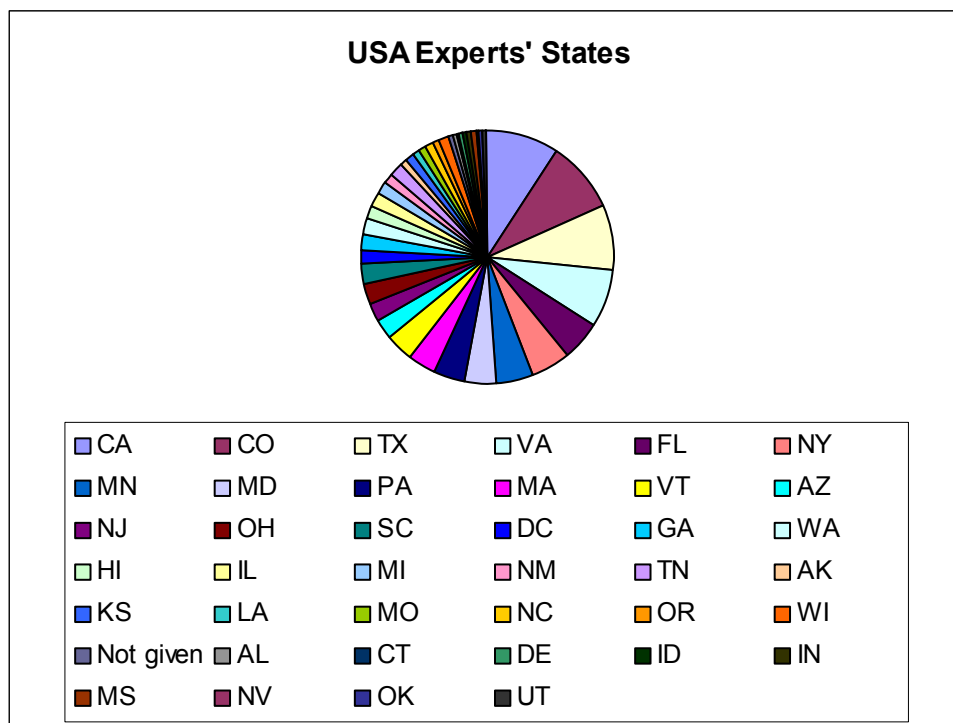


Figure 2: Distribution of experts within the United States by state

C. Experts Type of Work: There is no data field in the AskNSDL database for the type of institution with which experts are affiliated; therefore, the following statistics were intuited from e-mail addresses, work information and the biography/credentials field in the experts' profiles. This data was manually recorded.

The majority of experts who provided enough information about their workplace to enable classification are employed in colleges/universities or by private business/research firms. (Note: This data was collected manually and may be spotty- it would be a useful, new database field for the experts to complete.

Table 3: Domain of Institution in which expert is affiliated

Experts' Work Type	Total
Unknown	93
Academic	88
Private business/research	83
Government	29
Library/Museum	9
Foreign enterprise	2
Government/Academic	2
Military	2
High School	1
Medical/Academic	1
Public non-profit	1
Grand Total	311

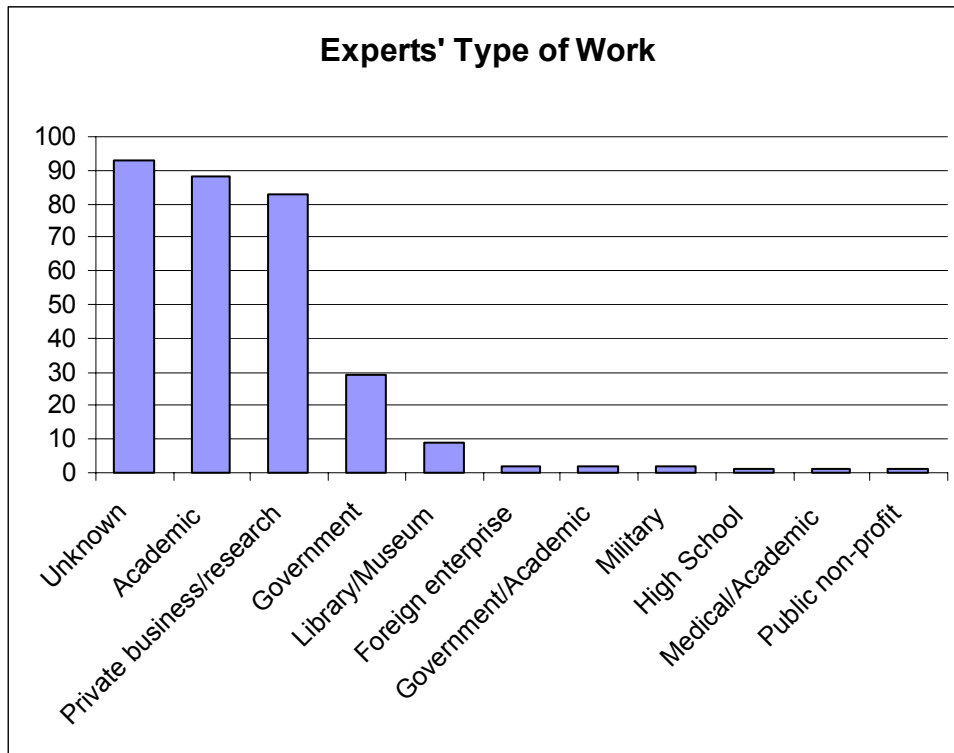


Figure 3: Distribution of domains with which experts are affiliated

D. Organizations of experts: The following data was intuited from fields on the experts' registration profiles: email address, work place, and credentials/bio. It was manually recorded. IBM and NASA contributed significant amounts of talent to this project. For further details on the "other" organizations that were represented by experts, see Table

Table 4: Organizations Represented by Experts

Experts' Organizations	Total
Other institutions from which 1 or 2 experts registered with AskNSDL	138
Unknown	88
IBM	48
NASA	8
University of Colorado, Boulder	8
Cornell University	3
Lockheed Martin	3
Motorola	3
NAVY	3
NOAA	3
Sandia National Laboratories	3
Syracuse University	3

Table 5: Other Institutions with which Experts are Affiliated

OTHER INSTITUTIONS	# Experts
Alcatel research center	2
ALCOA	2
Boeing	2
Cincinnati Museum Center	2
Eisenhower National Clearinghouse for Mathematics & Science Educ	2
Florida State University	2
Institute for Defence Analyses	2
Michigan State University	2
MIT	2
National Science Foundation	2
Pacific Northwest National Laboratory	2
"Specialized consulting firm"	1
Babson College	1
Boise State University	1
Bosch	1
Brookhaven National Laboratory	1
Center for Mathematics Education	1
Cipher Technologies Inc.	1
Clemson University	1
Colonial Richardson HS	1
Colorado State University	1
Cornell Dublier	1
Cummins Power Generation	1
Dept. of Labor	1
Douglas College	1
DuPont Microcircuit Materials	1
Ericsson Wireless Communications	1
Everett	1
FAA	1
Fort Valley State University	1
Genentech, Inc.	1
Geological Information Services	1
George Mason University	1
Georgia Southern University	1
GLOBE	1
Hope College	1
Howard University	1
Hudson River Museum	1
James Madison University	1
Kallima Consultants, Inc.	1
Kennesaw	1
Kessler Medical Rehabilitation Research and Education Corporation	1
Keuka College	1
Lafayette College	1
Lawrence Livermore National Library	1
Le Moyne College	1
Lindsey Wildlife Museum	1
Marquette University	1

Meyertons, Hood, Kivlin, Kowert and Goetzel	1
Miami	1
Middle Tennessee State University	1
Mississippi Polymer Technologies	1
MO-SCI Corp.	1
Motorola	1
NASA	1
NASA/University of MD	1
National Agricultural Library, ARS, USDA	1
National Center for Environmental Research/EPA	1
New Mexico State University	1
Nokia	1
North Carolina State University	1
Northrop Grumman Newport News Research and Development	1
Notre Dame de Namur University	1
NSDL	1
NSF	1
Oak Ridge National Laboratory	1
Oberlin College	1
Ohio State University	1
Optonics.com	1
Oregon State University	1
Peperdine Univ	1
PETROSAINS Discovery Centre	1
Purdue University	1
Questionmark	1
Randolph-Macon Woman's College	1
RF Micro Devices	1
RIT	1
Rockhurst	1
Rutgers University	1
Science & Technology International	1
Science Museum of MN	1
Servo Systems Co	1
Southwest Research Institute	1
Stanford University	1
Stevens	1
SUNY at Stony Brook	1
Tetra Tech MPS	1
Turtle Hollow Associates, Inc.	1
U.S. Geological Survey	1
UCAR	1
UCB	1
UCLA	1
UCSD	1
udell.edu	1
UMN	1
Underwriters Laboratory	1
University of Arizona	1
University of Arkansas at Pine Bluff	1

University of California	1
University of Colorado	1
University of Florida	1
University of Hawaii	1
University of Houston	1
University of Houston - Downtown	1
University of Kansas	1
University of Little Rock	1
University of Louisiana	1
University of Maryland	1
University of Northern Colorado	1
University of Redlands	1
University of San Diego	1
University of Wisconsin - Madison	1
USDA Forest Service	1
usda-apmru.tamu.edu	1
Villanova	1
VRD/University of Buffalo	1
Walla Walla College	1
Washington and Jefferson College	1
Washington and Lee University	1
Wentworth Institute of Technology	1
WGBH	1
Woods Hole Oceanographic Institution	1
Xtreme Energy Inc	1
Zoran Corp.	1
Grand Total	138

E. Subject Coverage of Experts: Experts covered all major subject categories and subcategories. Highest coverage was in the following fields: Algebra, Computer Science, and Engineering. Low coverage in Health and its subcategories, plus a high rate of questions in these categories, resulted in the highest number of unanswered questions.

Table 6: Subjects with the Highest rates of coverage by Experts

Topic (51-75 Experts) # Experts	Topic (76-148 Experts) # Experts
Applied mathematics	62
Algebra	77
Arithmetic	60
Computer Science	100
Calculus	62
Engineering	148
Careers in Technology	64
General science	59
Geometry	54
Physics	63
Trigonometry	58

Table 7: Subjects with high rates of coverage by Experts

Topic (11-25 Experts)	# Experts	Topic (25-50 Experts)	# Experts
Aging	13	Biological and life sciences	36
Agriculture	23	Biology	29
Anthropology	10	Careers	49
Astronomy	22	Careers in Science	47
Body systems and senses	18	Chemistry	27
Botany	15	Discrete mathematics	29
Careers in Mathematics	19	Earth science	45
Disease	12	Ecology	29
Education (General)	21	Functions	40
Educational media	17	Instructional issues	32
Educational technology	23	Mathematics	44
Entomology	11	Measurement	39
Environmental health	19	Physical sciences	45
Geography	20	Probability	37
Geology	22	Science	31
Health	14	Space sciences	30
History of science	21	Statistics	37
Integrating technology in the classroom	22	Technology	31
Metallurgy	18		
Meteorology	20		
Multimedia education	20		
Natural history	18		
Number sense	25		
Number theory	23		
Nutrition	11		
Oceanography	20		
Paleontology	14		
Patterns	24		
Pharmacology	11		
Psychology	11		
Safety	13		
Technical Standards	13		
Technical Standards	12		
Technology planning	23		
Zoology	12		

Table 8: Subjects with lowest coverage by Experts

Topic (5-10 Experts)	# Experts
Careers in Health	7
Careers in the Social Sciences	6
Criminology	6
Death and Dying	8
Economics	10
Embryology	10
Histology	10
History (General)	9
Mental/Emotional Health	9
Ornithology	10

Social Sciences	6
Sociology	7
Substance Abuse	8

III. Question Analysis: A function of the dynamic database-driven website, AskNSDL Reports, generated the following numbers. These figures do not appear to represent unique questions. Many duplicate questions arrived during ESTME Week, probably due to the patron resubmitting the same question. Whenever these were caught, they were placed in the AskNSDL trashcan; however, some duplicates did pass through the system.

When appropriate, such as when questions lingered in the “unclaimed” queue for more than 24 hours, they were reclassified in multiple categories in order to increase the number of qualified experts who could view these questions. From the statistics below, it appears that the same question is counted multiple times for each category in which it appears.

Data in Section A and Table 5/Figure 4 reflect the “inflated” number of questions as derived from the AskNSDL “Reports” function. Section B presents data derived from querying the “Questions” Table of the AskNSDL database. In the database table, each question is uniquely recorded when the question is first asked.

A. Major Parent Categories of Questions: Patrons asked the most questions in the subcategories of Science. Health and Mathematics took second and third place.

Total # of questions asked 3/15/04-3/24/04: 719
 Total # of questions answered 3/15/04-3/24/04: 627
 Total # of questions claimed and “in progress”: 10

Table 8: Major Parent Categories of Questions Asked

Parent Category	Total
Science	426
Health	132
Mathematics	109
Education (General)	30
Technology	13
Social Sciences	7
The NSDL: Use, Build, Join	2
GRAND TOTAL:	719

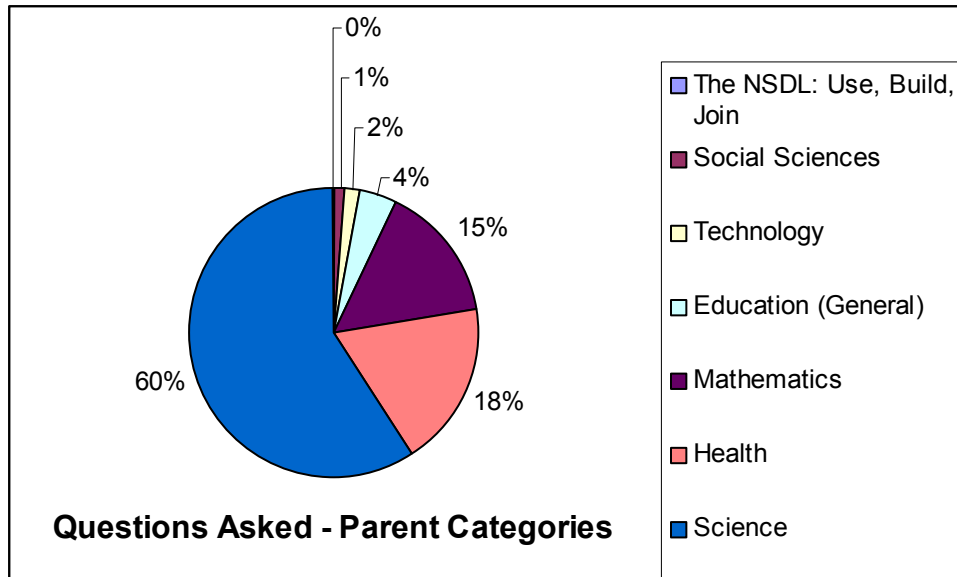


Figure 4: Distribution of questions asked by major, parent categories

B. Sub-category and Audience Analysis: (Note the data in this section is derived from the AskNSDL database table, “Questions.” Each question is counted once.)

“Body systems and senses,” a child of the parent “Health” category registered the highest number of questions (38), closely followed by “Astronomy (33)” and “Biological and life sciences.” When one combines “Astronomy” and Space Sciences (25), the subject matter moves to 1st place. Considering the “newsy” nature of this topic (especially in light of the Mars Rover Mission), this is not surprising.

Question activity within three of the top five subcategories represents the primary curricula of elementary, middle and high schools. These three categories are “Body Systems and Senses,” “Biological and life sciences,” and “Science.”

The audience category presents ambiguous information due to errors on the part of the patron who asked the question. For example, middle school students used their teacher’s login; thus, some students’ questions appeared as from a “middle school teacher.” Table 6 groups questions from populations of Elementary School, Middle School and High School - without further breakdown by “teacher” or “student.”

Table 9: Analysis of AskNSDL questions by Sub-category and Audience

Body systems and senses: 39	Middle School	17
	High School	2
	Elementary School	20
Biological and life sciences: 34	Middle School	18
	High School	2
	Elementary School	14
Astronomy: 33	NSDL Partner	2
	Middle School	12
	Graduate	2
	Elementary School	17
Science: 26	Middle School	10
	Elementary School	16
Space sciences: 26	Middle School	17
	Elementary School	9
Chemistry: 23	Middle School	9
	High School	5
	Graduate	2
	Elementary School	7
Zoology: 22	Middle School	9
	High School	1
	Elementary School	12
Earth science: 21	Middle School	7
	Graduate	2
	Elementary School	12
Algebra	Middle School	20
Biology: 20	Middle School	10
	High School	2
	Elementary School	8
Engineering: 20	Middle School	10
	Elementary School	10
Mathematics	Middle School	20
Careers in Science: 17	Middle School	9
	Elementary School	8
Careers: 16	Middle School	10
	Elementary School	6
Physics: 16	Middle School	7
	High School	1
	Graduate	1
	Elementary School	6
	College/University Faculty	1
Health: 12	Middle School	8
	High School	1
	Graduate	1
	Elementary School	2
General science: 10	Middle School	3
	Elementary School	7
Meteorology: 10	Middle School	2
	Elementary School	8

Oceanography: 9	Middle School	4
	Elementary School	5
Technology: 9	Middle School	2
	Elementary School	7
Careers in Mathematics: 8	Middle School	7
	Elementary School	1
Disease: 8	Middle School	5
	Elementary School	3
History of science: 8	Middle School	3
	Elementary School	5
Paleontology: 8	Middle School	1
	Graduate	1
	Elementary School	6
Botany: 7	Middle School	3
	Elementary School	4
Calculus: 7	Undergraduate	1
	Middle School	6
Ecology: 7	NSDL Partner	1
	Middle School	1
	Elementary School	5
Nutrition	Middle School	7
Agriculture: 6	Middle School	2
	Elementary School	4
Mental/Emotional Health	Middle School	6
Number theory	Middle School	6
Physical sciences: 6	Middle School	2
	Elementary School	4
Aging: 5	Middle School	4
	Elementary School	1
Computer Science: 5	Middle School	4
	Elementary School	1
Death and Dying: 5	Middle School	4
	Elementary School	1
Geometry	Middle School	5
Applied mathematics	Middle School	4
Education (General)	Middle School	4
Entomology: 4	Middle School	1
	Elementary School	3
Environmental health: 4	Middle School	3
	Elementary School	1
Functions	Middle School	4
Human sexuality	Middle School	3
Measurement	Middle School	3
Probability	Middle School	3
Trigonometry	Middle School	3
Arithmetic: 2	Middle School	1
	Elementary School	1
Careers in Health	Middle School	2
Embryology: 2	Middle School	1

	Elementary School	1
Geography	Middle School	2
Natural history	Middle School	2
Pharmacology	Middle School	2
Statistics	Middle School	2
Substance Abuse	Middle School	2
Careers in Technology	Middle School	1
Careers in the Social Sciences	Middle School	1
Discrete mathematics	Middle School	1
Economics	Middle School	1
Geology	Elementary School	1
Histology	Middle School	1
History (General)	Elementary School	1
Instructional issues	Middle School	1
Multimedia education	Elementary School	1
NSDL Community	Elementary School	1
Number sense	Middle School	1
Ornithology	Elementary School	1
Patterns	Middle School	1
Psychology	Middle School	1
Safety	Middle School	1
Technology planning	Middle School	1
Grand Total		571

C. Hot Topics: According to the AskNSDL Report Type, “Hot Topics,” the top five topics were Dinosaurs, Math questions, Science Class Questions, homework, and transformer calculations.

Table 10: “Hot Topics” from AskNSDL Reports

Hot Topics	
Dinosaurs	20
Math Question	8
SCIENCE CLASS QUESTIONS	8
What's the use of homework?	8
transformer calculations	6

IV. Feedback from Experts and Patrons: I've pasted below some comments that have arrived thus far in my personal email and through the AskNSDL website.

A. From experts (Personal email)

- *NSDL is doing very good interaction session of asking questions and getting them answered. I am happy to be a part of it.*
- *I had fun, answering questions. Is the Ask NSDL gig over, now that Engineering Week is done? I would enjoy staying on to answer the occasional math question.*
- *I couldn't help but notice that I've been answering all the sex questions...the one about the sex of the child had me looking up information for an hour. I hadn't touch that material since high school. I really appreciated the chance to brush up on my X and Y chromosomes theory. They've done a lot of work since the sixties, I was impressed.*
- *Please take me off your list.
Whoever designed this whatever needs to think more about what he is trying to do, why and how. You send me duplicates and triplicates of the same question and there is no editing. When I try to answer a question, it does not show up on your Web site. If it's not there, let me know so I won't waste my time looking.
Some of the questions are reasonable, some are good, and some are plain nonsense.
I'd rather have someone ask me a question directly and not go through your unwieldy, stupid system.
The general idea is good, but the execution leaves a lot to be desired. When someone has thought this thing through and really designed a useful system, let me know. I like the idea of helping kids by conversing with them, but not this unwieldy second hand method you are using.
Goodbye for now.*
- *Thanks, Joyce. Since my last note, I think I have finally figured out the system and have responded to a couple of the queries available to me. In reviewing some of the other responses, I'm struck by the wise advice being given. It's put me off a bit, in that other seem wiser than I am to give the kids an answer. It's rather fun, however.*

B. From patrons

From AskNSDL-generated "Reports":

- *Thank you for your knowledge and your time answering my question. This really helped since I want to be a Video Game Designer.*

- *Dear Ashwin - Thank you for replying quickly to my question. It's pretty amazing that the universe was made so long ago. Greg*

Question Submitted to the AskNSDL Question Service:

- *How come I haven't received an answer to my question in "a few days"?*
(Note: A response was sent to this patron re the status of his original question. His question had been "claimed" by an expert but was not answered. Following two reminders to the expert, the question was "unclaimed by the administrator," and put back in the "Available Questions" queue. The student received his answer from another expert within 2 days. The total time was 10 days from original question to answer posted.)

Report Submitted March 25, 2004

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