DLESE Data Services Workshop
April 18-20, 2005

Evaluation Report
October 7, 2005

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TABLE OF CONTENTS

Executive Summary

This report is intended to inform members of the DLESE Data Services Team. The main points are listed below.

Schedule

- Participants particularly value the meeting as an opportunity for networking and making connections with others in different fields. In keeping with this, they wished for more breakout time in their team groups and longer breaks to network with those not in their teams.
- Participants valued some of the talks, especially the initial Keynote talk, the GLOBE talk, and the EarthSlot demonstration, but preferred a greater focus on classroom applications and lessons learned in education.
- Participants wished for greater education emphasis throughout the workshop. All professional roles indicated this preference. There were multiple requests for talks by educators, especially those that share actual experiences with using data in the classroom—what works and what doesn't. Specific suggestions to increase education emphasis were offered, including the encouragement of poster sessions by educators.
- Participants thought there was too much time spent on passive tool demonstrations. There were a number of suggestions that the demos be participatory, perhaps in small group 'lab' groups. Tools with direct applicability to classroom instruction should be emphasized and explained in that context.

Data Use

- Satellite imagery data types were the most commonly used data type category, followed by the disciplines of meteorology, topography, sea surface temperature, and climate model data. Processing was done mainly with spreadsheets and image software.
- The groups encountered similar barriers in their use of data—the primary barriers were unusable formats and the inability to locate the data that was sought.
- Preferred methods of instruction for learning about data use varied with the attendee's professional role. "Examples" were the most popular method of instruction selected, followed by "step-by-step instructions", "online tutorials", and "one-on-one email assistance".
- Many participants acknowledged the need to manipulate, especially to subset, data before the data may be used for education.
- Participants agreed that the top priority contexts for data use are K-12 classrooms, with undergraduate classrooms a close second.

Workshop Logistics

- Attendance on the last day dropped slightly, but not as drastically as in 2004. It was suggested that the team presentations should be first on the agenda the last day, with talks following to increase the likelihood that all team members would be present.
- Many attendees requested more comprehensive pre-conference orientation, including the agenda, a description of the EET project to be done during the workshop, general information on the EET and DLESE, team assignments, and short biographies of all attendees.
- Participants felt their groups were successful and well facilitated.
- Participants' knowledge of data projects increased through the poster session. However, better coordination and management of this session might increase its effectiveness. Assigning poster spaces ahead of time and maintaining an up-to-date list of poster topics would help. Encouraging educators to present posters would also enhance the experience.
- The location, facilities, and organization of the meeting were considered good to very good, though the distance from an airport and the altitude were problems for some.

Recommendations

Workshop

- ❖ Actively recruit educators to give talks, demos, and poster sessions next year, especially emphasizing case studies of using data in the classroom.

- ❖ Increase breakout group time as well as break time between sessions.

- ❖ Decrease number of talks to one or two a day and emphasize the education applicability of the talk topics.

- ❖ Decrease number of demos and make them interactive, small-group-lab situations, or other experience-based demonstrations.

- ❖ Provide more comprehensive pre-workshop information to all participants, including background information on and links to DLESE and the EET.

- ❖ Provide the agenda, team assignments, and an overview of the EET chapter task on the Workshop website as soon as possible.

- ❖ Link to the Swiki well in advance so people can begin to work with it early.

- ❖ Request very brief biographies of all attendees and place on workshop website so people can become familiar with each other to a degree before the workshop.

- ❖ Provide better coordination and management of the poster session from registration on. Assign poster spaces (including their size) ahead of time, set up map of poster area, and maintain an up-to-date list of poster titles to ensure there is ample room for all presenters.

- ❖ Set up team presentations as first agenda item on the last day to increase the likelihood that all members will be present for most groups.

Data for Educational Use

- ❖ Data providers should consider two primary barriers to educational use of their data—discoverability and formatting. Common formats (or easy conversion tools) would enhance the educational uses of data. Ease of subsetting by time or space would also be valuable. Enhancements of the data presentation that would help educators find the data would also be of help.

- ❖ To enhance educational use of their products, data providers and tool developers should consider using examples, step-by-step instructions, and online tutorials in their database documentation. Email assistance should also be offered for specialized assistance.

Introduction

This report provides information to DLESE Data Services Workshop organizers to help them understand the degree to which the meeting (as perceived and experienced by participants) met goals and to inform planning for future events.   Presented below are a description of the conference; the methods by which the evaluation data were elicited, compiled, and analyzed; a profile of the participants who responded to the surveys; presentation of responses to survey items; and conclusions and recommendations for future action. Appendices include selections of tabular and coded open-ended data.

The goals of the DLESE Data Services Workshop were:
- To bridge the communication gap between technologists and educators about the resources, obstacles, needs and terms used by the other group.
- To establish working relationships between data providers/tool builders and curriculum developers/educators.
- To provide clear, relatively low-barrier pathways to developing educational resources using data (using data portals, EET chapters)
- To produce guidelines and information for the DLESE community about data use in the classroom (from the technical perspective and from the educational perspective).

To reach these goals, the workshop was organized to include participants representing a range of DLESE community members who are concerned with data use: data providers, data tool builders, curriculum developers, educators, and research scientists.   Participants were chosen for their contributions of data, tools or scientific and educational expertise needed for the development of a series of Earth Exploration Toolbook chapters.

Evaluation Procedures: Data Gathered and Analytical Methods

Data informing this report were collected through a series of six questionnaires, which are uploaded on the Data Services Workshop Swiki. The questionnaires were the following:

- Data Use Questionnaire. Administered on the first day. Eleven questions (ten multiple choice with open-ended option, one Y/N with open-ended explanation requested).
- Daily Questionnaire. Administered three times, at the end of each day. Four questions (two multiple choice, one Likert, one open-ended).
- Poster Session Questionnaire. Four questions (one multiple choice for each of the 20 posters, two regular multiple choice, and one open-ended).
- Final Day Questionnaire. Fifteen questions (one multiple choice, two multiple choice with open-ended option, four open-ended, one Likert, seven mixed Likert/explanation).

Results from each questionnaire are reviewed in a section of this report, with the daily and final questionnaires combined in one section due to their overlapping topics. The results of Likert, multiple choice, and Y/N questions were processed in Excel and are presented in figures. Open-ended questions were categorized and coded for dominant themes in NVivo and summarized within the text of each section. Professional roles of respondents were identified for disaggregated display in Excel graphs to show differences between the groups.

Response rates to the questionnaires are summarized in Figure 2-1.
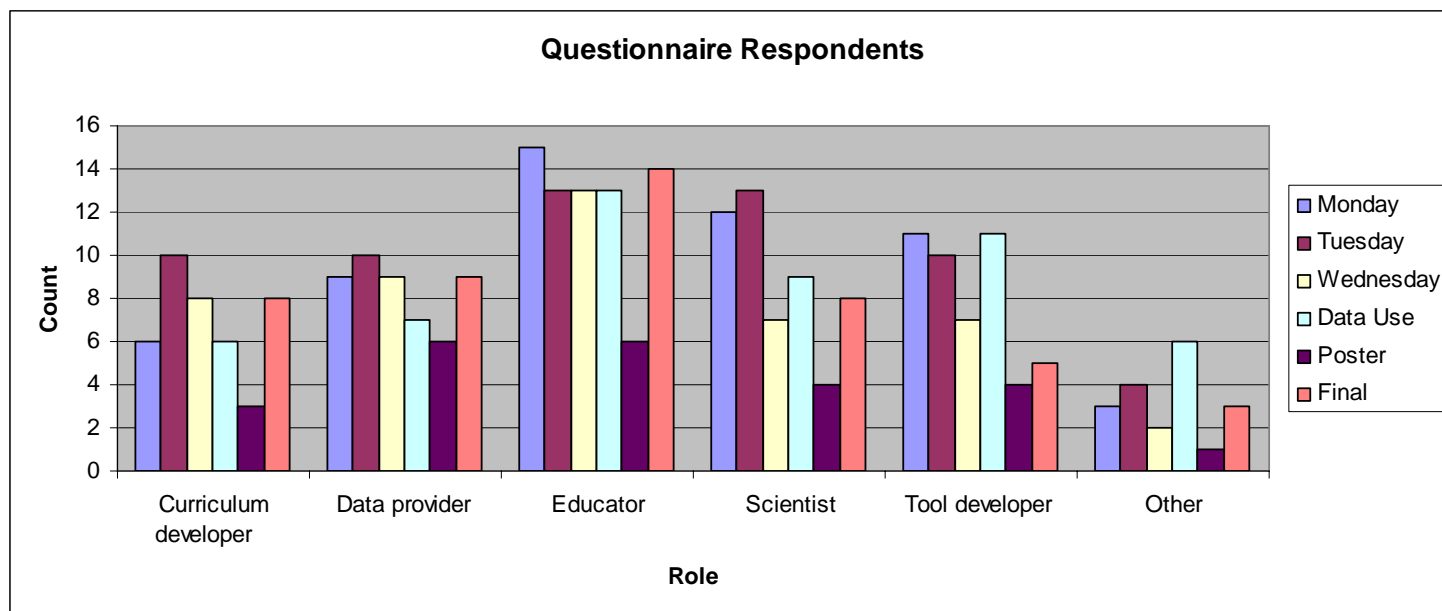
Figure 2-1. Number of respondents to each questionnaire, grouped by professional role.

Table 2-1 reveals the response rates for each questionnaire and each professional role, based on the maximum response rate observed in each role group.

Daily questionnaires were well responded to, with the drop-off on the final day probably due to people leaving early. The data use questionnaire had an excellent response rate, especially considering its length. The final questionnaire had a reasonable response rate, as well. Response rates were lowest for the poster session questionnaire. This is probably due to the difficulties in distribution as well as the fact that the posters actually presented did not completely match the questionnaire (which had been based on pre-registration information). There is a detailed discussion of the poster questionnaire response issues in that section of this report.

By role, the data providers and educators had the highest response rate, at least 10% above the overall average. This can be noted throughout this report in the high response numbers for these two role groups.

Table 2-1. Comparative response rates for each questionnaire, using the maximum response rate as a baseline (100%).

Questionnaire	Curriculum developer	Data provider	Educator	Scientist	Tool developer	Other	Average
Monday	60%	90%	100%	92%	100%	50%	82%
Tuesday	100%	100%	87%	100%	91%	67%	91%
Wednesday	80%	90%	87%	54%	64%	33%	68%
Data Use	60%	70%	87%	69%	100%	100%	81%
Poster	30%	60%	40%	31%	36%	17%	36%
Final	80%	90%	93%	62%	45%	50%	70%
Average	68%	83%	82%	68%	73%	53%	71%

As displayed in Table 2-2, the number of responses by each professional role ranged from 3 to 15. Because of the low number of respondents for some roles, the actual counts are given in the bar graphs throughout this report, rather than the percentages which would imply more comparability between the roles than is warranted.

Responses were analyzed both as a whole and as disaggregated groups, split by primary professional role. The few people who selected "Other" as their primary professional role were mainly workshop staff.

Open-ended answers to the "Other" option in questionnaires are incorporated into the summary text where they differ from the gist of the multiple-choice questions.

Table 2-2. Number of responses for each questionnaire by each professional role.

Questionnaire	Curriculum developer	Data provider	Educator	Scientist	Tool developer	Other
Monday	6	9	15	12	11	3
Tuesday	10	10	13	13	10	4
Wednesday	8	9	13	7	7	2
Data Use	6	7	13	9	11	6
Poster	3	6	6	4	4	1
Final	8	9	14	8	5	3

Previous Data Use Survey

Respondents

There were 51 respondents to the Data Use Questionnaire.

Question 1 asked for their professional role (see Figure 3-1).   Educators and tool developers were the largest groups of respondents.
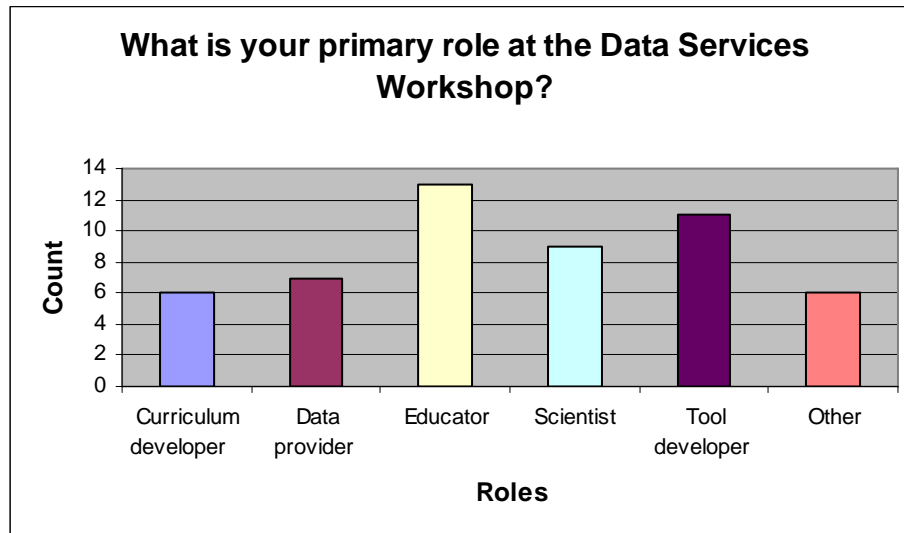

Figure 3-1. Primary professional roles of respondents to data use questionnaire.

Weather/climate and geology/seismology data are the most widely accessed data types.

Related questions detailed later in this section show that corresponding formats (image, GIS, and text) and data sources (NOAA, USGS) are also mentioned most frequently, as are the analysis systems used to process this data.

Question 2 asked about successful use of data in educational contexts. Respondents selected from eight learning goals and could pick more than one answer (see Figure 3-2).

Self-directed education, weather, and geology/seismology were the most common learning goal categories for which data was successfully used.

Almost half (76) of the total responses (161) were within personal exploration, weather, and geology/seismology learning goals.
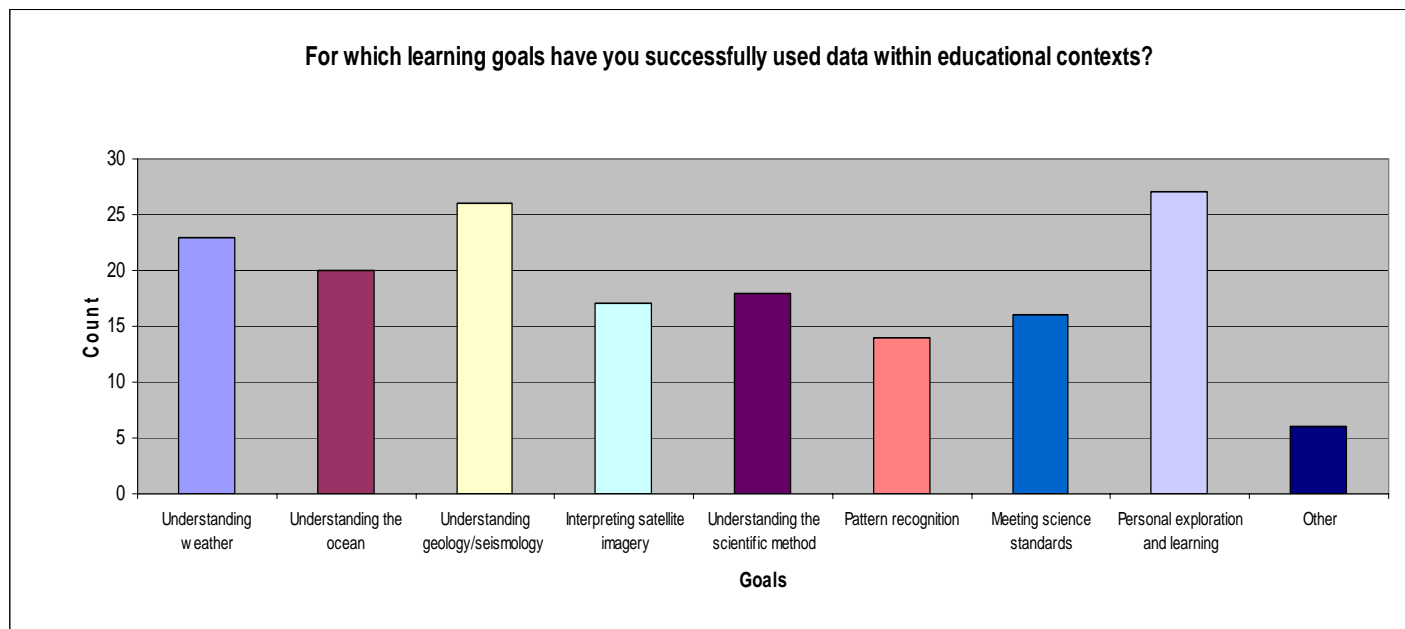
Figure 3-2. Learning goals for which there has been successful use of data in educational contexts.

Educators, curriculum developers, and tool developers have successfully used data to support learning goals in these eight categories, while the scientists and data providers have had mixed success.

In Figure 3-3, we break out these responses by role, educators (not surprisingly) are the most frequent respondents in each category (53 selections among 13 educators), with tool developers second (41 selections among 11 tool developers). Although there were fewer curriculum developer respondents, they also averaged over three selections per person (21 selections among six respondents). Scientists and data providers averaged about half the number of selections per person than the other three roles.

Those who answered "Other" referenced learning goals such as math, air quality, solar power, data processing techniques, Excel use, land use/population learning, and GIS use.

For which learning goals have you successfully used data within educational contexts?
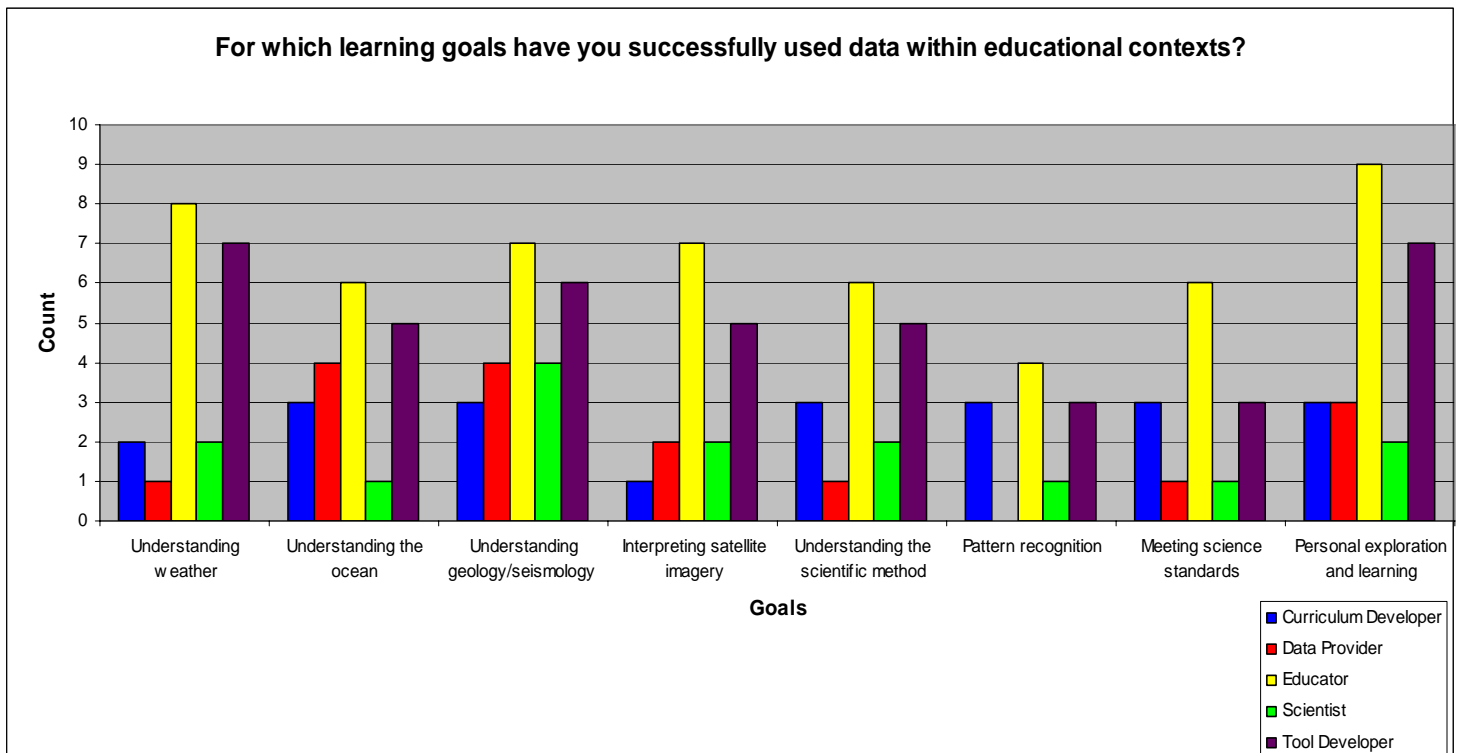
Figure 3-3. Learning goals for which there has been successful use of data in educational contexts, split by respondents' professional roles.

Question 3 asked what types of data respondents had used successfully; they could pick more than one category. The results are displayed in Figure 3-4.
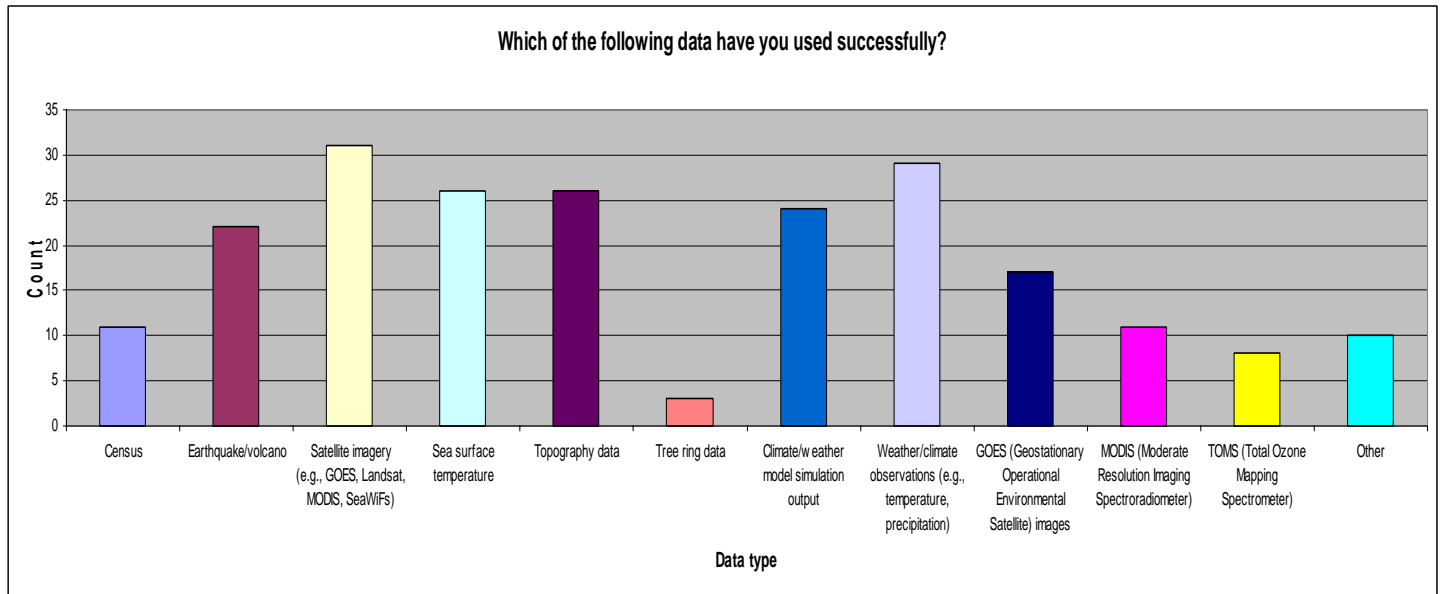

Figure 3-4. Specific data types which have been used successfully by respondents.

Satellite imagery data types were the most commonly selected among the data type categories, followed by the disciplines of meteorology, topography, sea surface temperature, and climate model data.

Satellite image data were mentioned 31 times. In specific disciplines, meteorology data were mentioned 29 times, while earthquake, sea surface temperature, topography, and climate model data were each mentioned over 20 times each.

When the data are disaggregated by role, tool developers and educators mentioned the most data types used successfully. Curriculum developers and data providers mentioned fewer, and scientists the fewest of all.

The data types used were similar for all roles with a few exceptions. Educators were the largest users of census data and, to a lesser extent, TOMS data. Tool developers emphasized satellite and MODIS data more than educators did.

Figure 3-5 shows the usage reported by each role for each type of data. The most common data type mentioned by scientists was earthquake/volcano; tool developers' chose satellite imagery most often. Only educators reported using tree ring data at all. Satellite and climate/weather data accounted for nearly half the reports of successful use overall (101 out of 208).

Tool developers and educators selected an average of six and five data types (65 among 11 respondents, and 64 among 13, respectively)--the largest numbers among the roles. Curriculum developers and data providers each average four selections (22 among six, and 25 among seven, respectively), while scientists averaged two (nine selections among 15 respondents).
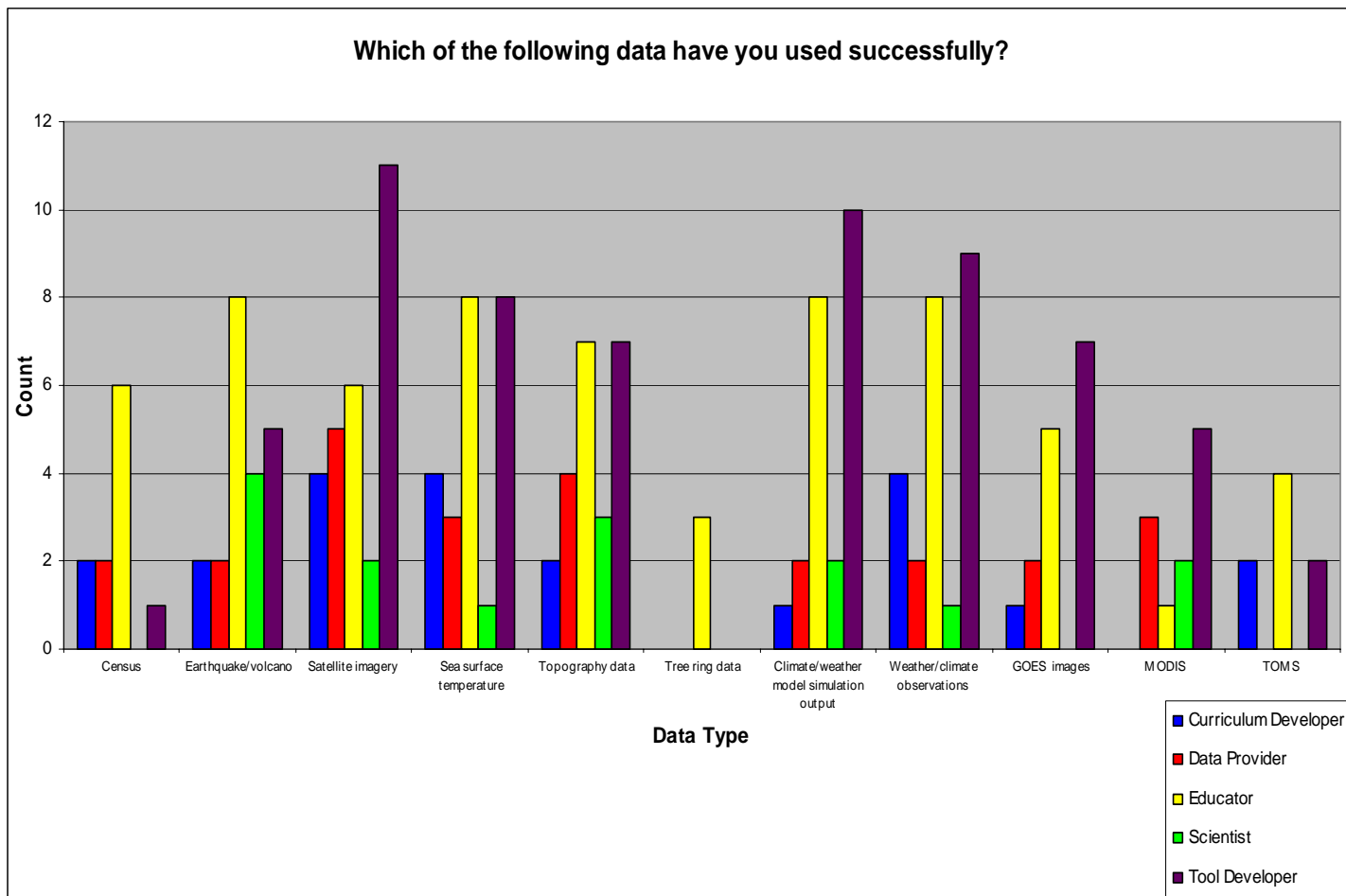
Figure 3-5. Specific data types which have been used successfully, split by respondents' professional roles.

Those who answered "Other" specified data types including air quality, buoy, streamflow, demographic, ocean profile, and water quality data.

Question 4 asked participants what data formats they had used successfully. They could select as many as they wanted to. The summary results are presented in Figure 3-6.
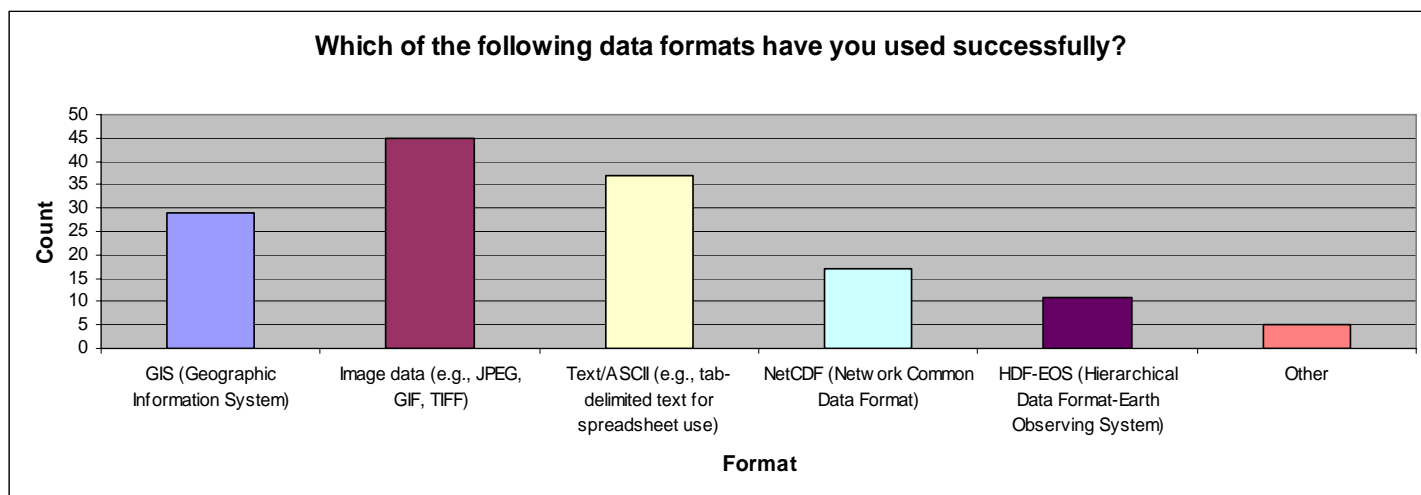
Figure 3-6. Data formats used successfully.

Image data was the most commonly mentioned (45 instances) data format used successfully. Text or ASCII data was also mentioned often (37 times), and GIS data was third (29 mentions). NetCDF and HDF-EOS formats were less commonly mentioned.

When the information is disaggregated by role (Figure 3-7), it is seen that no educators and only one curriculum developer reported successful use of either NetCDF or HDF-EDS formats. Image and GIS formats were the most often reported formats by educators. Tool developers generally reported the highest successful uses of the various formats of data.
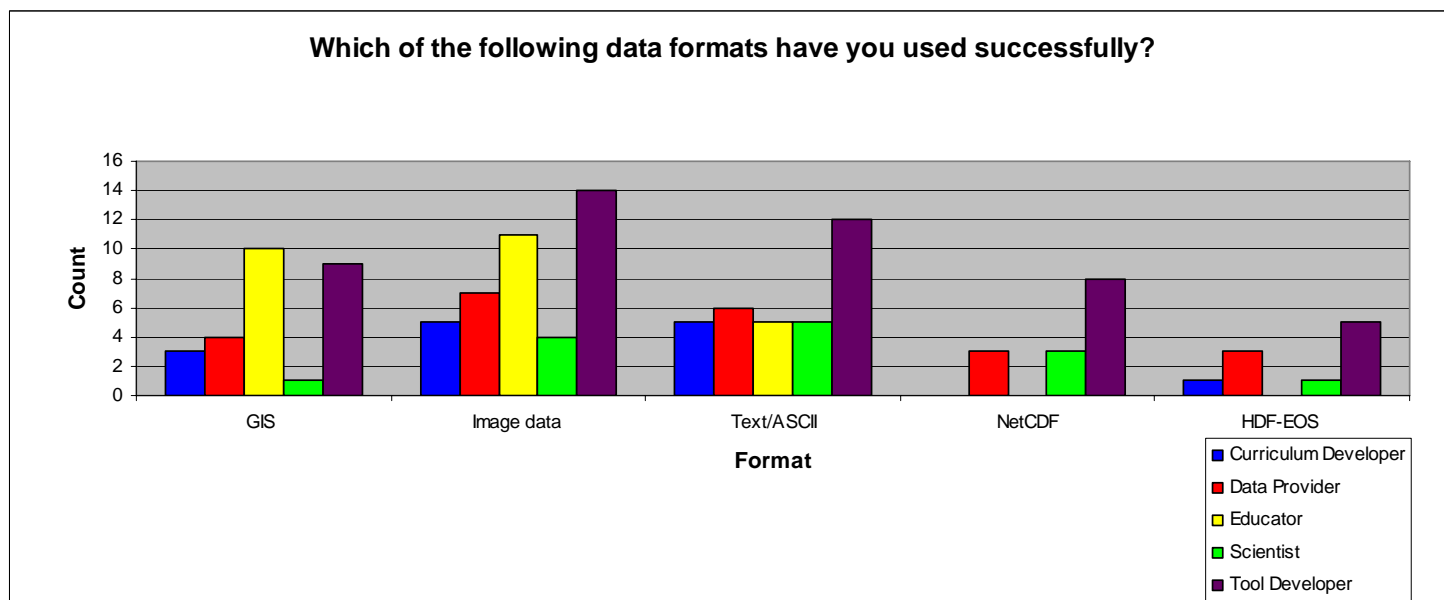
Figure 3-7. Data formats used successfully, split by respondents' professional roles.

Formats noted (once each) under "Other" included SAC, ESN, AMASEIS, GRIB, and BUFR.

14

Question 5 asked participants what data sources they had used more than once; they could select as many as they wanted to. Figure 3-8 shows the responses.
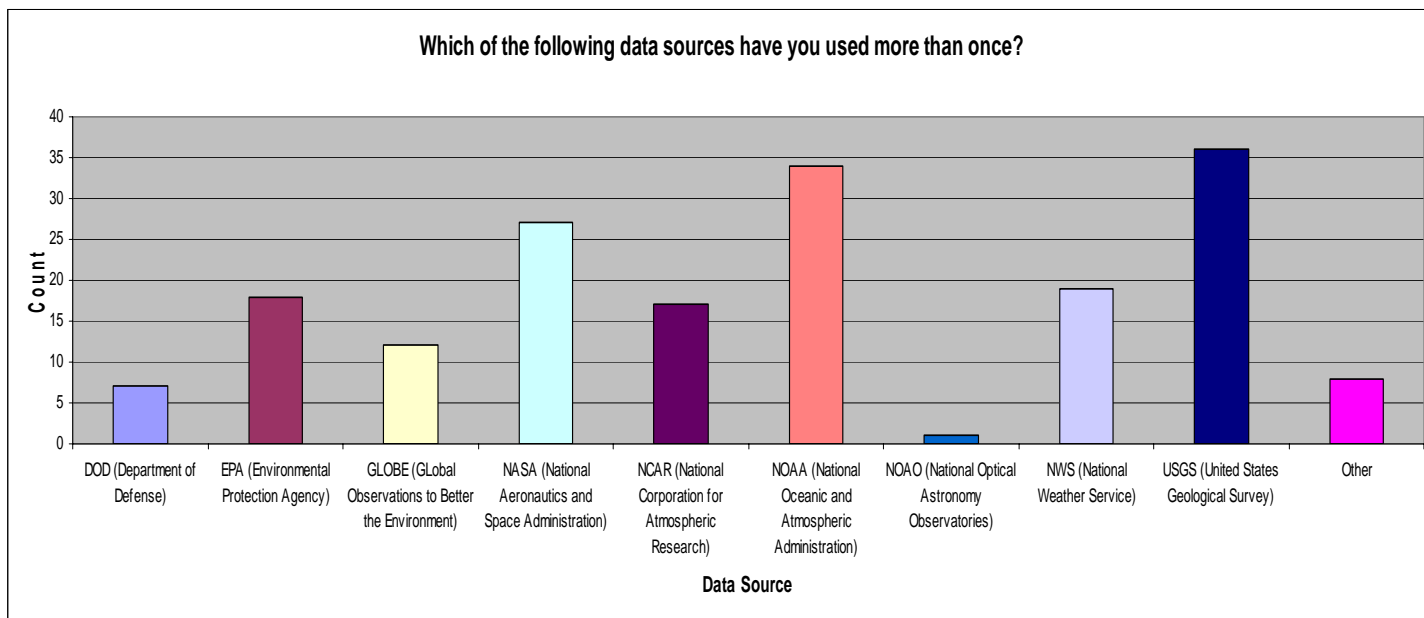
Figure 3-8. Data sources used more than once.

USGS and NOAA were the most frequently mentioned sources of data (35 and 34 times, respectively). NASA was also mentioned often (27 times). NWS, which is a subset of NOAA, was also selected 19 times.

Figure 3-9 shows that educators and tool developers each averaged four data sources that they had used more than once. Curriculum developers and data providers averaged three sources, and scientists averaged one. Scientists probably stick to their area of expertise more than the other professional roles, whereas tool developers and educators rely on many different sources for their work.

Educators were the main users of EPA data, while tool developers seemed the primary users of NASA data. For NOAA, NWS, and USGS data, both educators and tool developers mentioned those sources frequently. Only educators mentioned NOAO data.
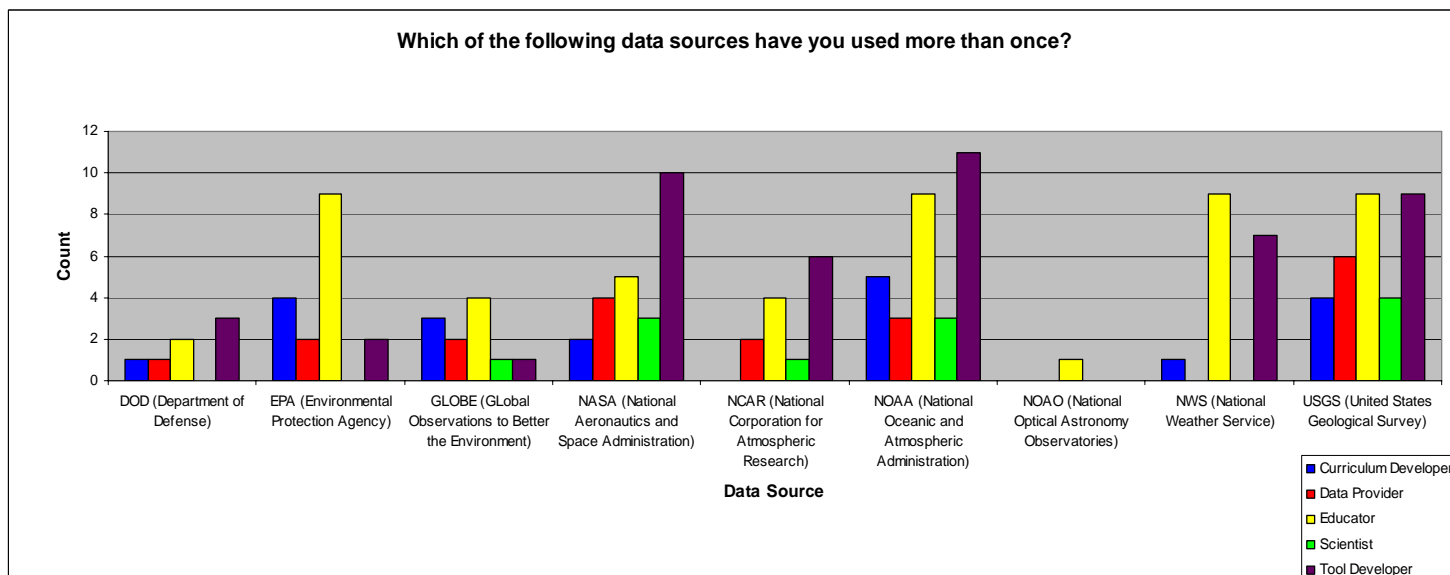
Figure 3-9. Data sources used more than once, split by respondents' professional roles.

Data sources mentioned under the "Other" option included IRIS and NGDC (both referenced twice), NCIS, NSIDC, Scripps, GDC, INSTAAR, and SSEC.

In Questions 3, 4, and 5, when a respondent selected "Other," there seemed to be some confusion between sources, types, and formats of data.   Certainly, there seemed to be less confusion this year with the multiple choice format questions than there was last year with the open-ended questions, but **some uncertainty about the distinction between source, format, and data type still remains.**

Most respondents modify data sets before they are used by end-users or learners.

Question 6 asked participants if they had found it necessary to modify data sets before they were used by an end-user or learner. Figure 3-10 illustrates the responses.
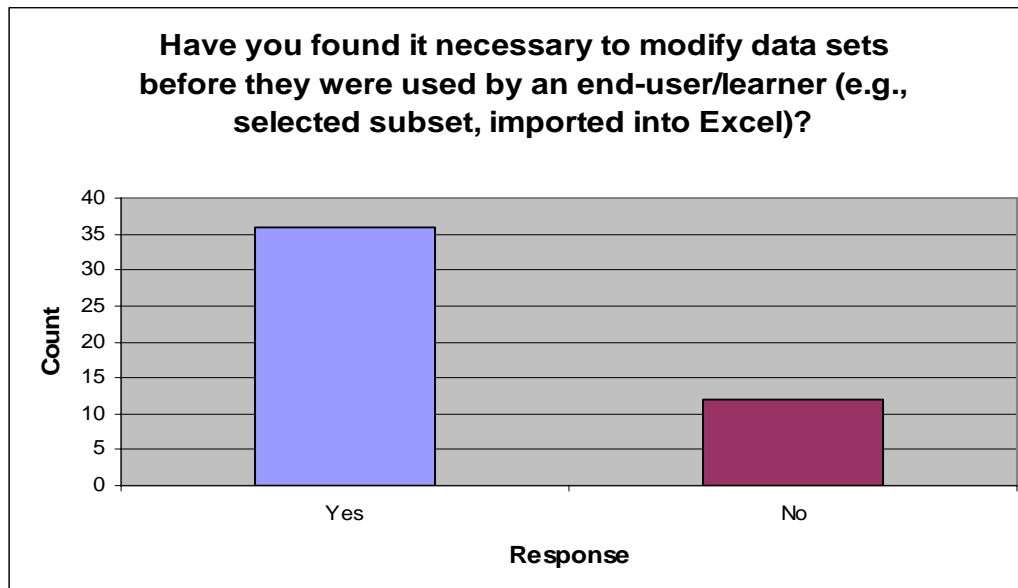
Figure 3-10. Frequency of respondents who have modified data for use by learners.

The figure shows that 75% of the respondents reported they had found it necessary to modify data. Respondents were asked what sort of modifications they had performed on the data. Out of 28 respondents, 11 prepare the data for Excel as at least one step of their processing. Four reported selecting a subset of the data by region, and three by time period.

Other reformatting procedures mentioned included changing projection/coordinate systems, using image processing software, using OpenDAP on HDF format, standardizing units, creating shape files for GIS, adding metadata, adding descriptors/attributes, reformatting into NetCDF or flat binary, changing the grid parameters of the data.

Figure 3-11 disaggregates the question by professional role. All curriculum developers and data providers reported needing to reformat data, while 71% of tool developers, 61% of educators, and 60% of scientists said they had reformatted. **Thus, reformatting data in preparation for the end user is done more often than not by all professional groups.**
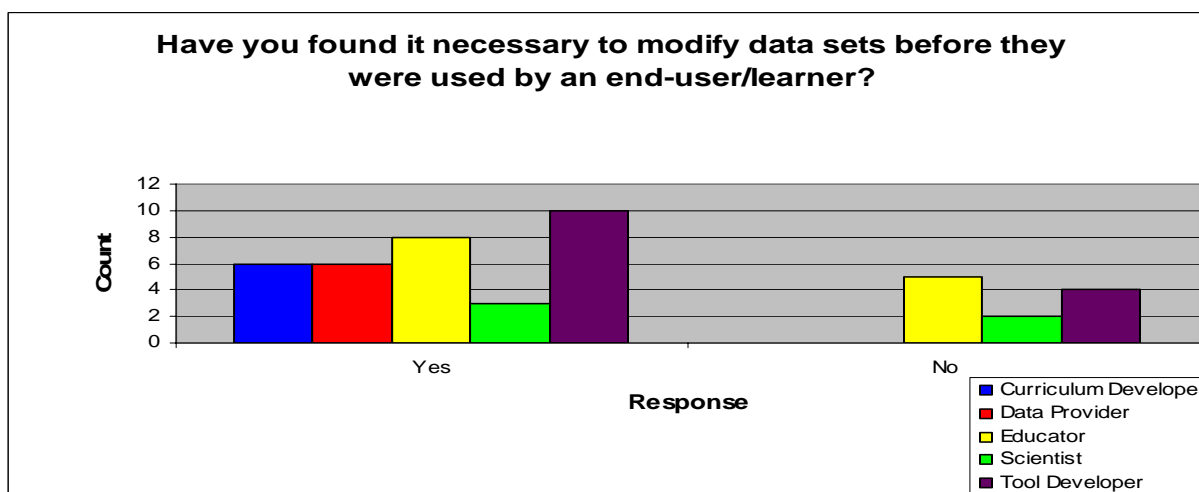
Figure 3-11 Frequency of respondents who have modified data for use by learners, split by respondents' professional role.

17

Question 7 asked participants what data analysis/visualization tools they commonly use (see Figure 3-12).
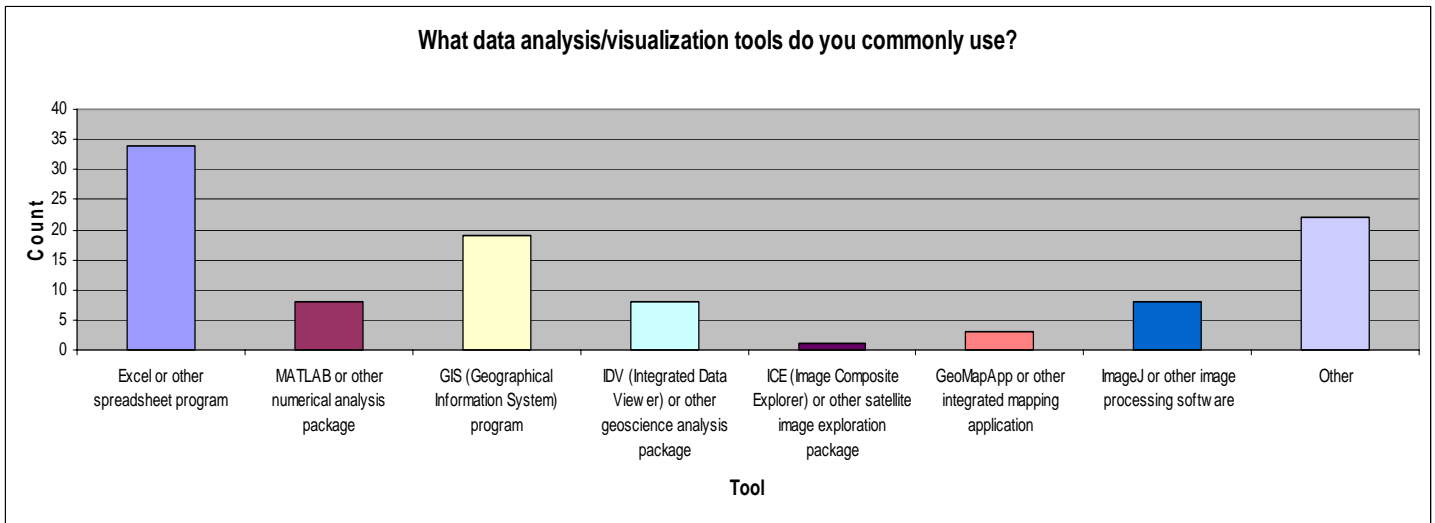
Figure 3-12. Data analysis and visualization tools commonly used by respondents.

Spreadsheet programs such as Excel were the most commonly selected tool, followed by GIS systems. The frequently-checked "Other" category included such tools as IDL and GMT (three times each); GrADS, Ferret, World Watcher, and McIDAS (twice each); and Imagine, FX-Net, GEMPAK, Global Earthquake Explorer, Online IRIS tools, AMASEIS, WINQUAKE, Director, LAS, INGRID, and HYDRA (once reference for each).

Respondents from each professional role (see Figure 3-13) averaged two selections in answer to this question except scientists, who averaged one selection. **Educators favored GIS far more than any other professional group. Tool developers mentioned the widest variety of tools.**
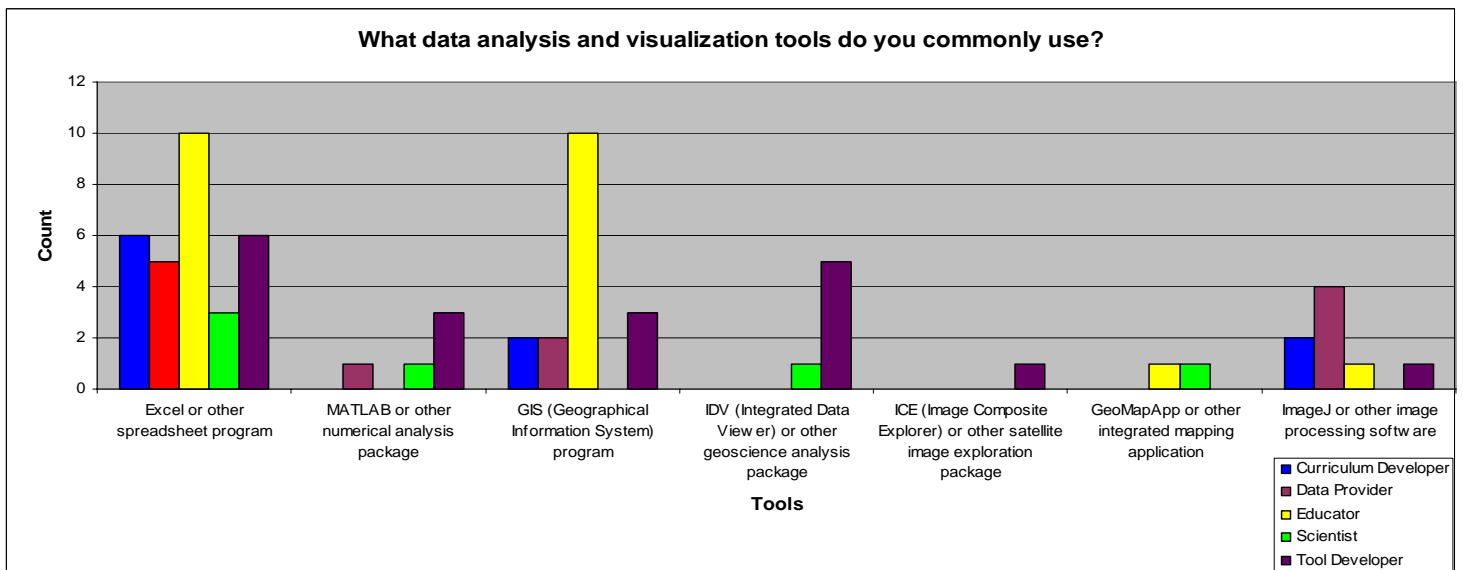
Figure 3-13. Data analysis and visualization tools commonly used by respondents, split by professional role.

Question 8 asked what data analysis procedures have end-users or learners performed on data. Figures 3-14 and 3-15 provide a summary of responses.
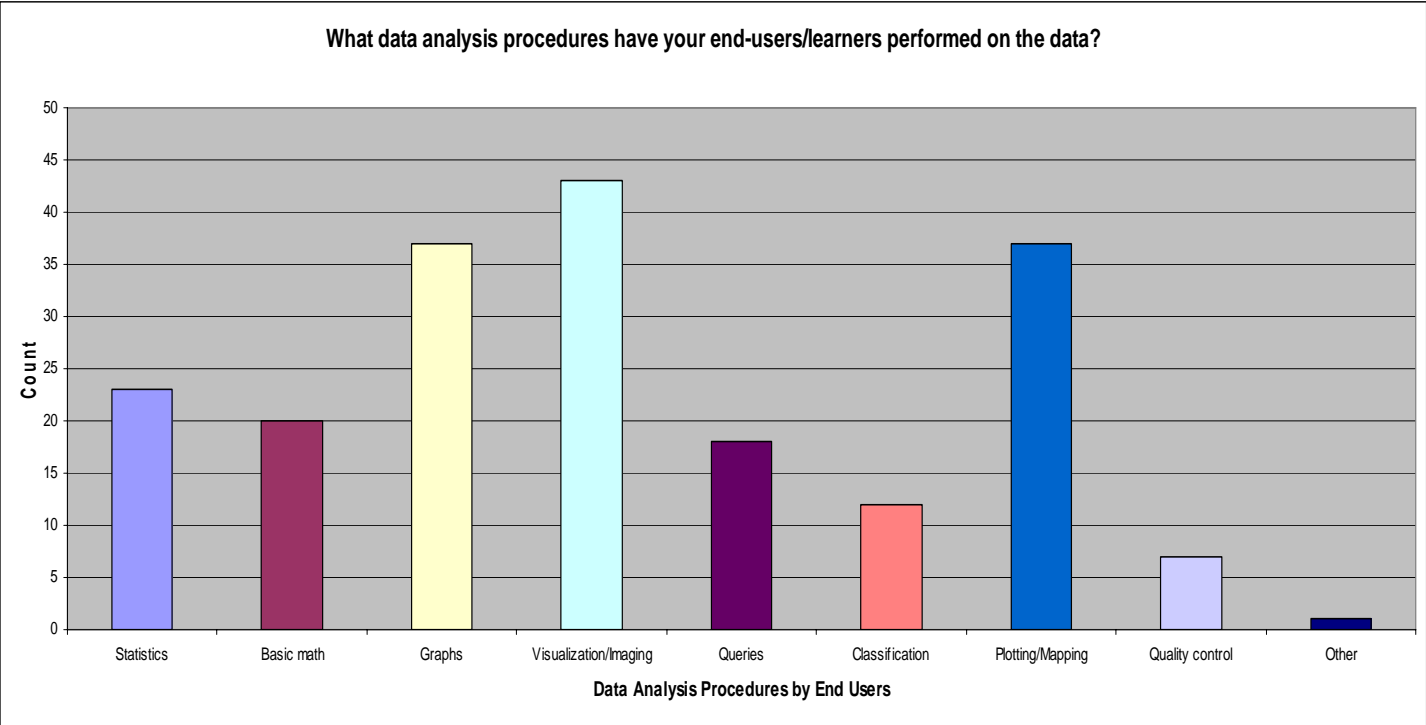
Figure 3-14. Data analysis procedures performed by end-users or learners.

End-users were most likely expected to use visualization and imaging procedures on data. The next most common procedures were graphing and plotting/mapping. These three categories accounted for nearly 60% of the responses to this question. Statistics and math procedures followed with 20 or more references.

Educators elected an average of five of the procedures, while curriculum developers, data providers, and tool developers elected four. Scientists elected an average of two procedures.
Educators tended to select querying procedures more often than the other roles. Data providers selected quality control procedures more often than members of any other role.
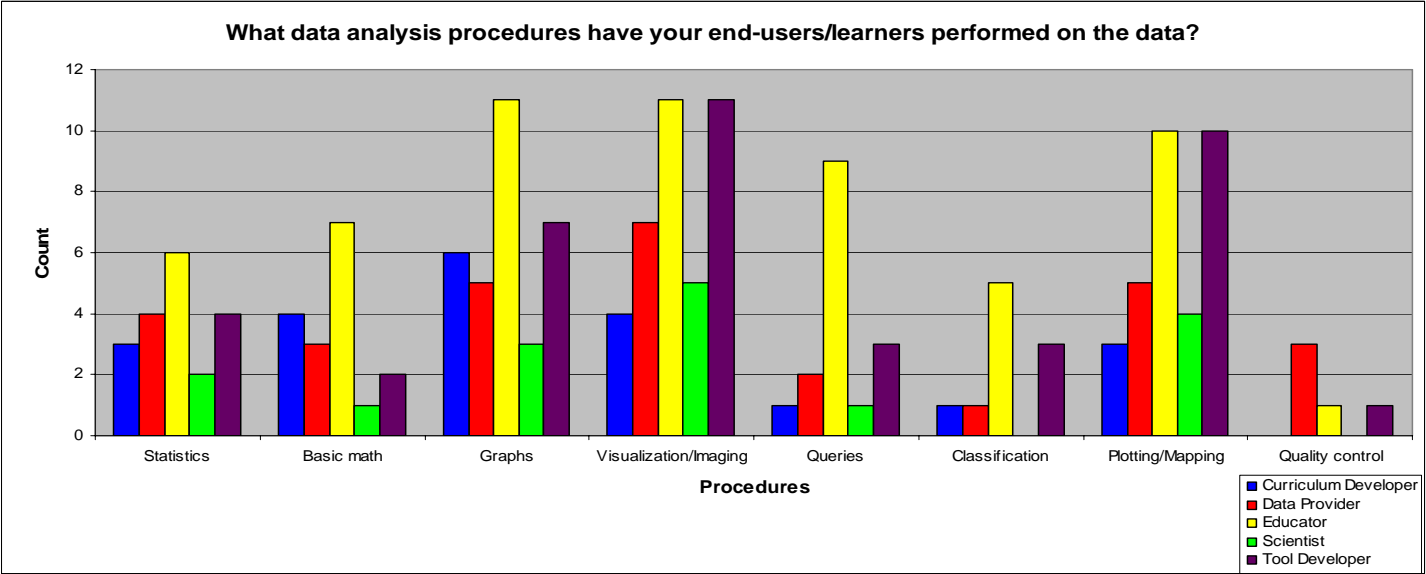
Figure 3-15. Data analysis procedures performed by end-users or learners, split by respondents' professional role.

Unsuccessful data use is mainly due to unusable formats and files that can't be found.

Question 9 asked participants if they had made any attempts to obtain and use data sets that were NOT successful and, if so, what barriers they encountered (ranked 1, 2, or 3 in order of priority). Results to the yes/no question are shown in Figure 3-16.
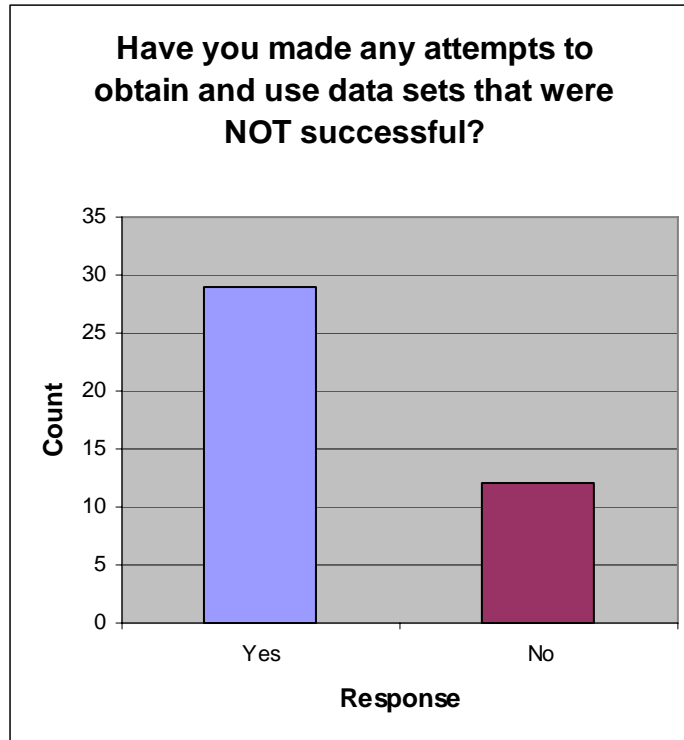
Figure 3-16. Frequency of respondents who had experienced unsuccessful attempts to obtain and use data sets.

Fewer than 30% of the respondents had NOT been unsuccessful in obtaining and using a data set in the past.
Disaggregated by role, Figure 3-17 shows that the ratios of those who had problems to those who didn't were a bit higher for tool developers (5/7) and educators (4/7), but were similar among the other professional roles (1/3 for curriculum developers and data providers, 1/4 for scientists).

Have you made any attempts to obtain and use datasets that were NOT successful?
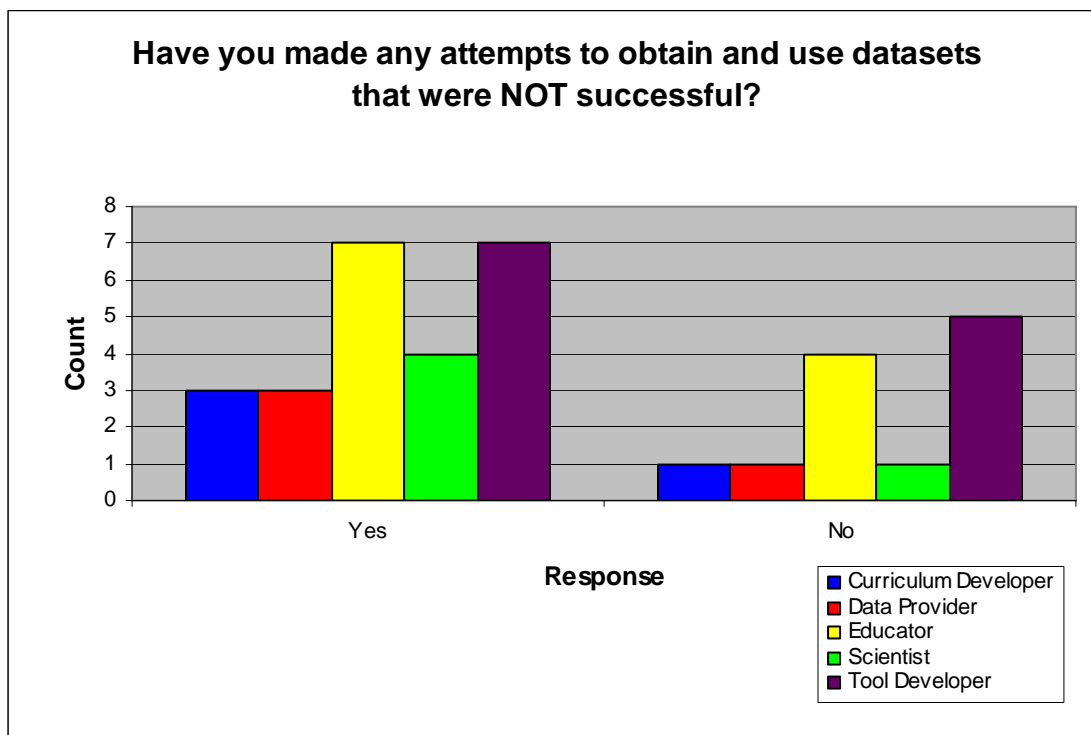
Figure 3-17. Frequency of respondents who had experienced unsuccessful attempts to obtain and use data sets.

The second half of the question asked participants to specify barriers they had encountered in their unsuccessful data use experiences, ranking them into priority 1, 2, and 3. Figures 3-18 and 3-19 display the barriers that were encountered.

What barriers did you encounter?
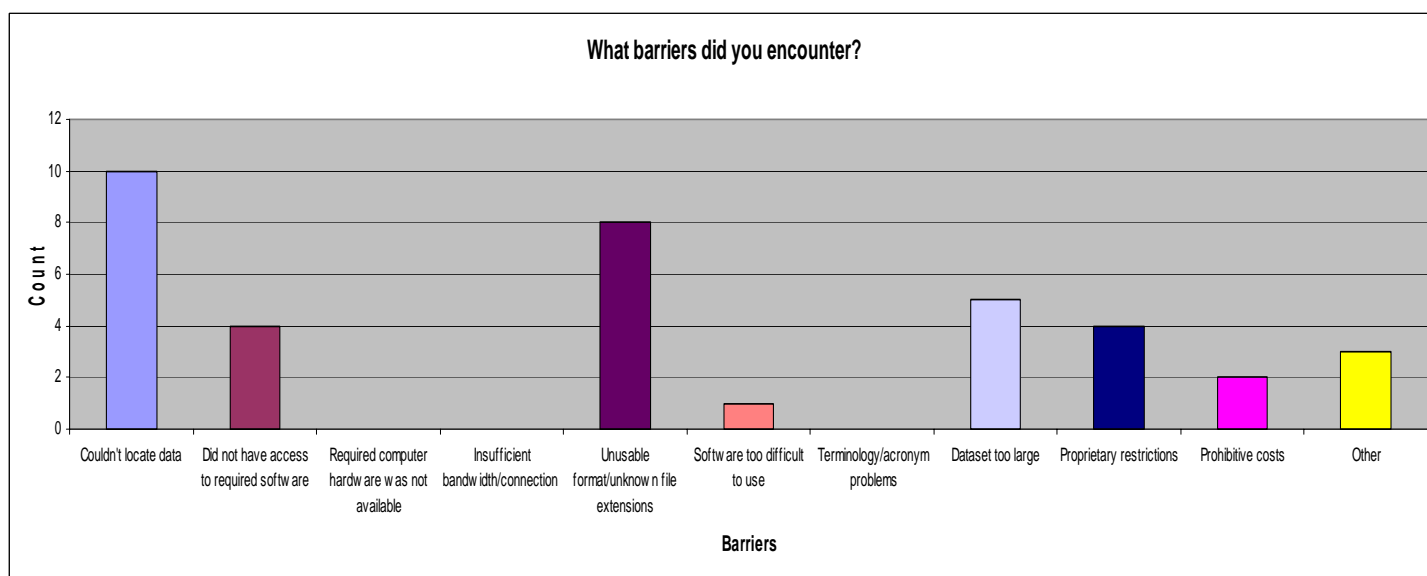
Figure 3-18. Barriers encountered when participants were unsuccessful in accessing data sets.

Being unable to locate the data was the most commonly selected barrier to data use. This was also the selection with the highest number of top-priority indicators. Unusable format or unknown file extensions was the second most-selected barrier. The dataset being too large was also selected by five respondents; this was elected the second-highest priority by the most respondents (see Appendix). Limitations on computer hardware, bandwidth/connection, and terminology were not selected as problems by anyone.
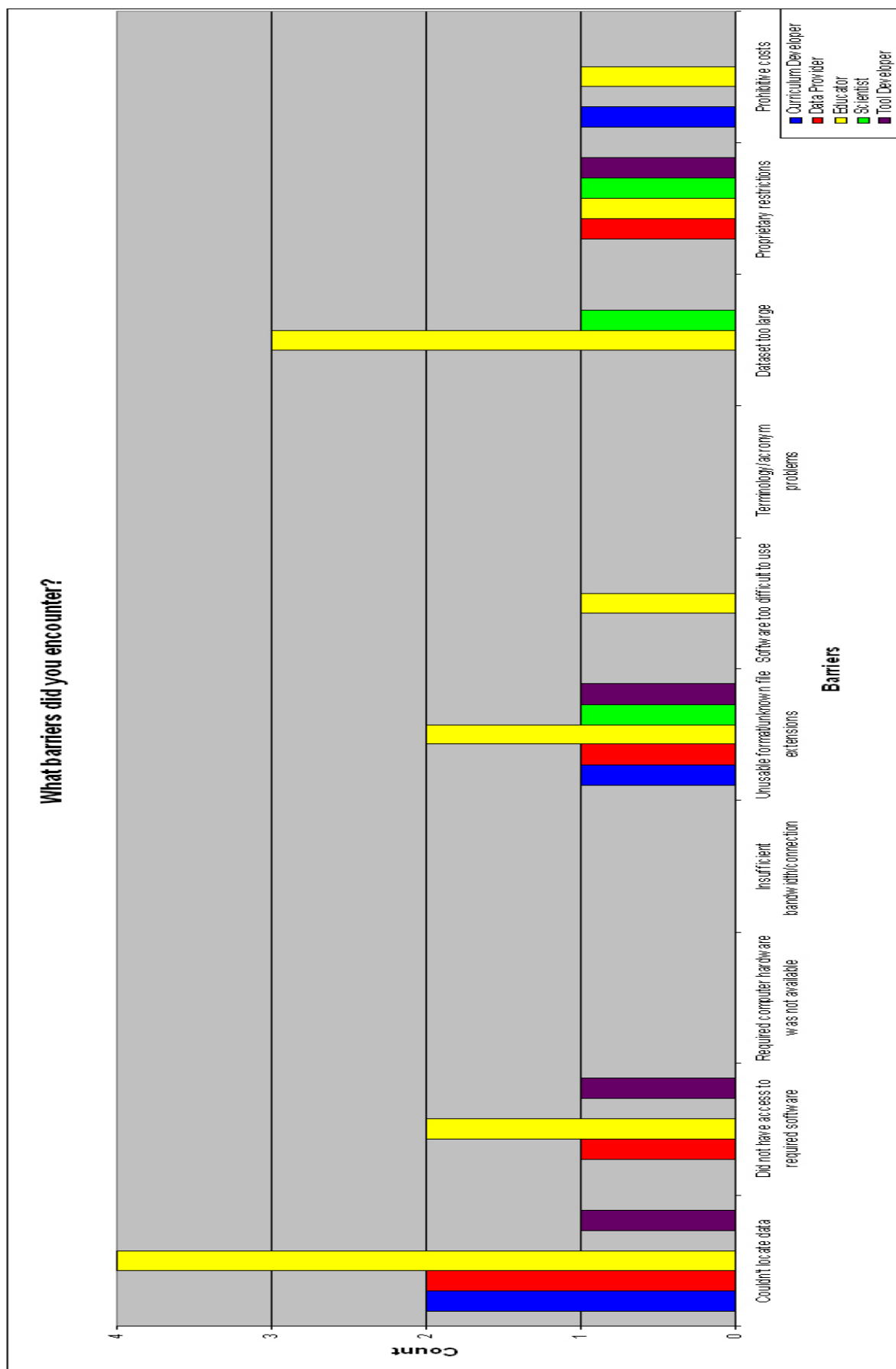
Figure 3-19. Barriers encountered when participants were unsuccessful in accessing data sets.

Examples and step-by-step instructions are preferred in data use support.

Question 10 asked participants what types of instruction or support are most helpful to them when using specific data sets. Figure 3-20 displays the responses.
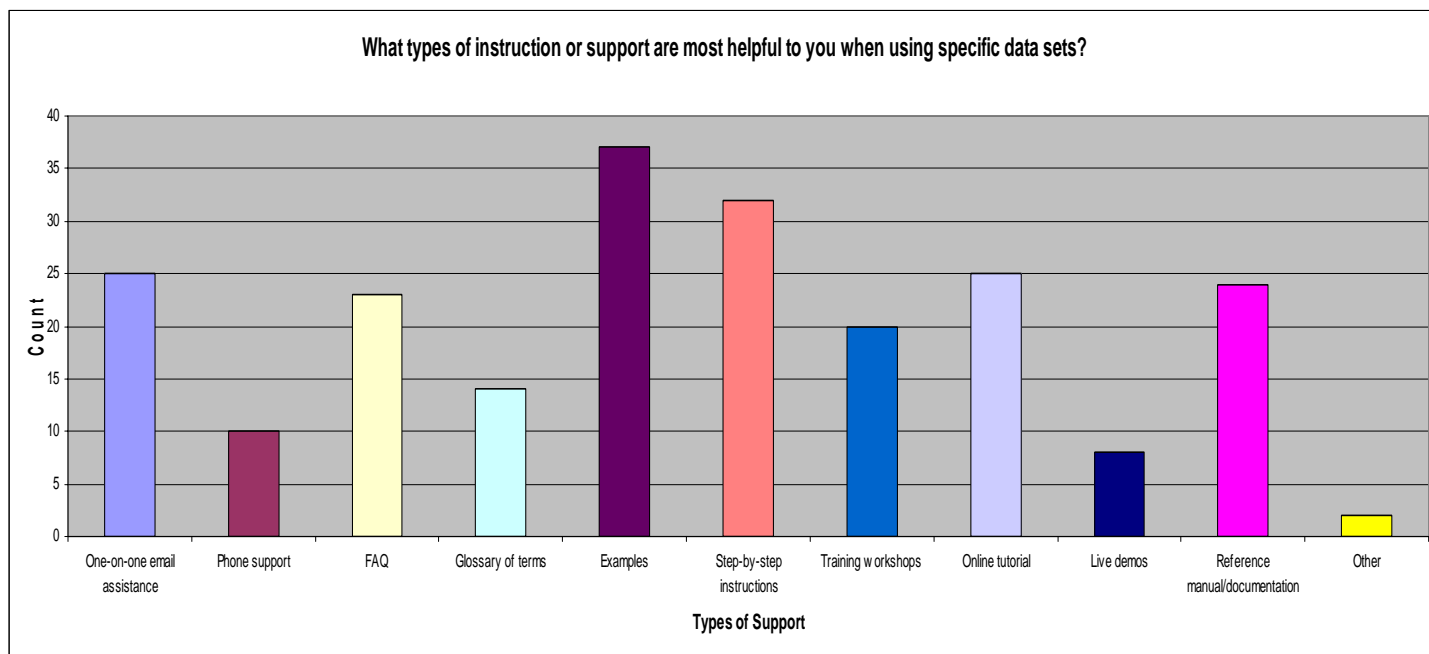
Figure 3-20. The most helpful types of instruction or support when participants use data sets.

Overall, examples were the most popular method of instruction selected, followed by step-by-step instructions, online tutorials, and one-on-one email assistance. The similar categories of reference material and FAQ were also selected frequently.

When the responses are separated by roles (see Figure 3-21), the instructional methods educators appreciated more than other groups were "a glossary of terms," "step-by-step instruction," "workshops," and "live demos. The other professional roles were fairly evenly distributed in their preferences, except that few of them prefer live demos or workshops.
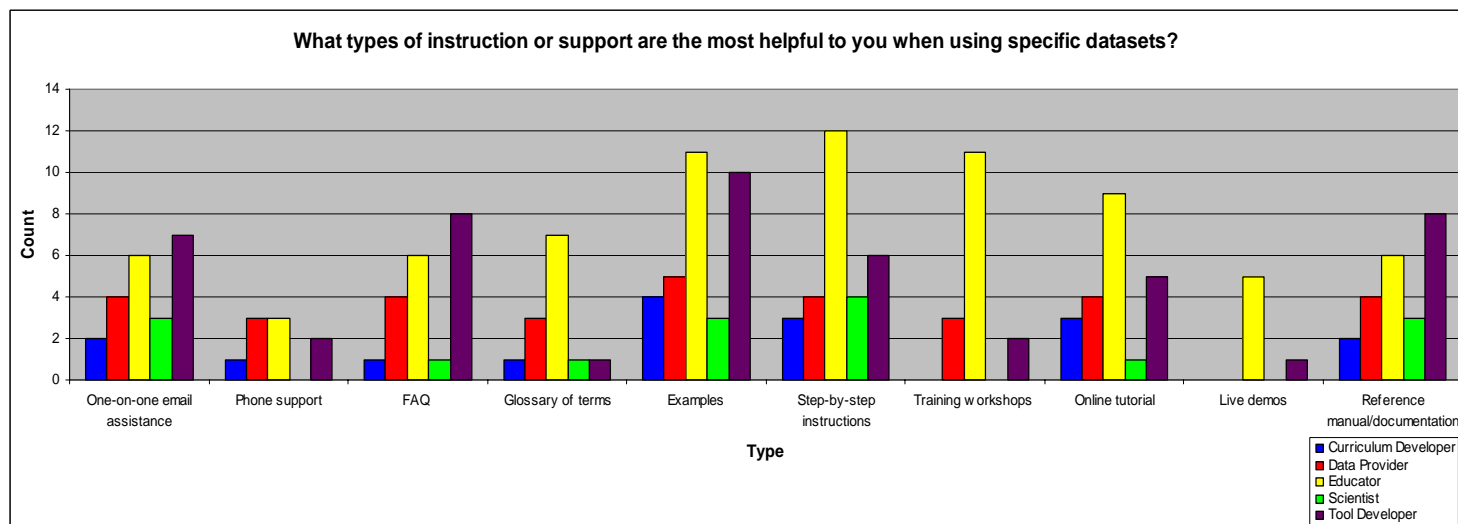
Figure 3-21. The most helpful types of instruction or support when participants use data sets, split by respondents' professional role.

Top priority audiences for data use are the K-12 and undergraduate classrooms.

Question 11 asked respondents' opinion on what the highest priority audiences are in which to encourage data use. Priority breakdowns are included in Figure 3-22.
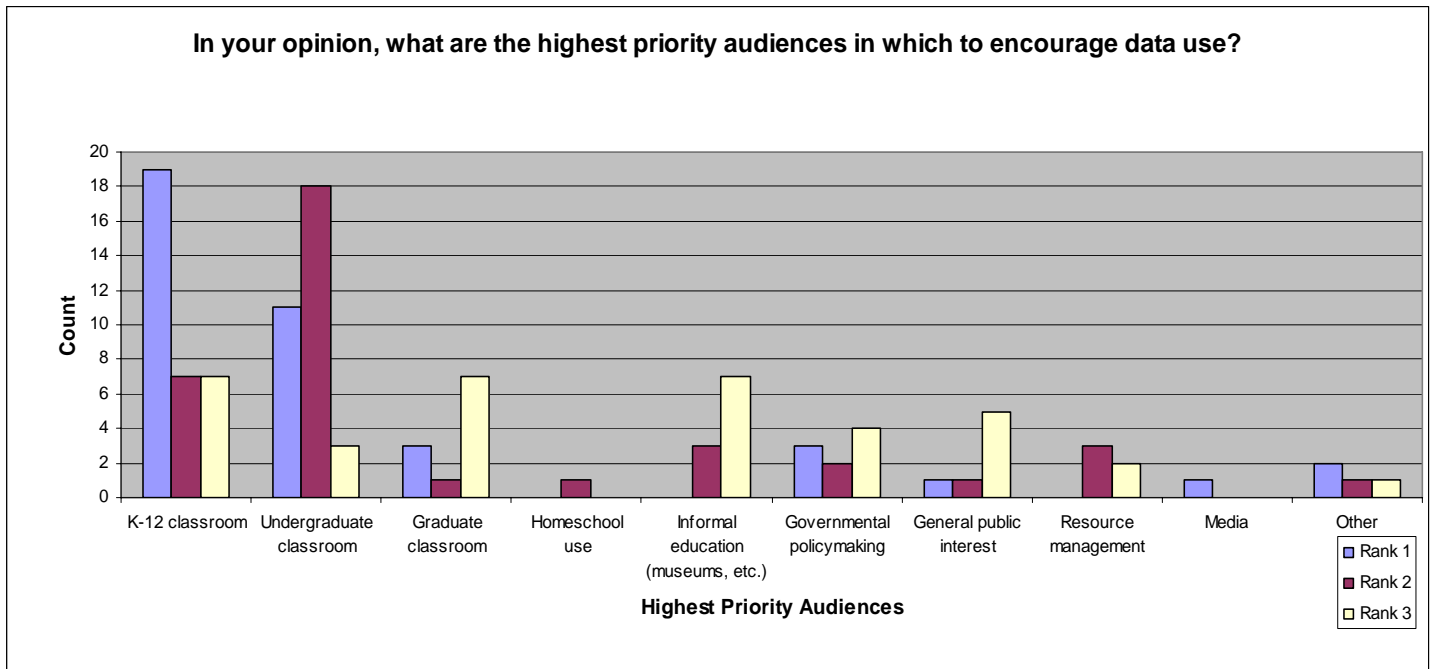
Figure 3-22. Ranking of highest priority audiences in which to encourage data use.

Attendees indicated that the top priority context for data use was by far K-12 classrooms, with undergraduate classrooms a close second.

Responses of any priority are shown in Figure 3-23.
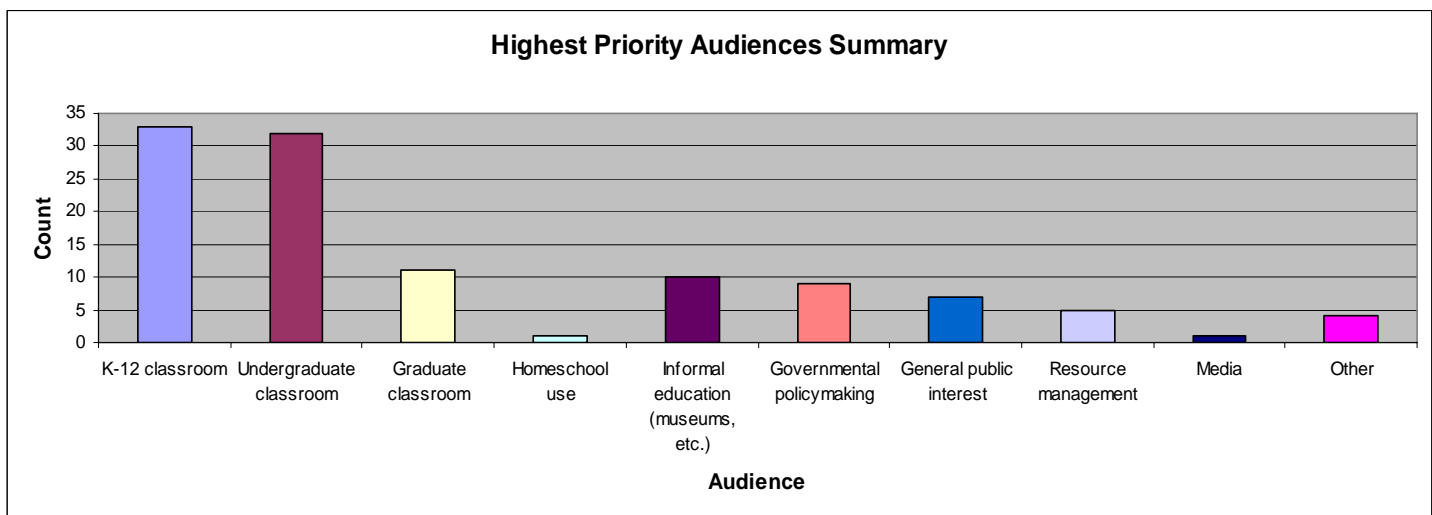
Figure 3-23. Audiences marked as either 1st, 2nd, or 3rd priority in which to encourage data use.

When the responses are disaggregated by the participant's professional role, there is fairly consistent agreement across the roles (see Figure 3-24). Data providers expressed proportionally higher priority for informal educators, government representatives, and resource managers than the other audiences.
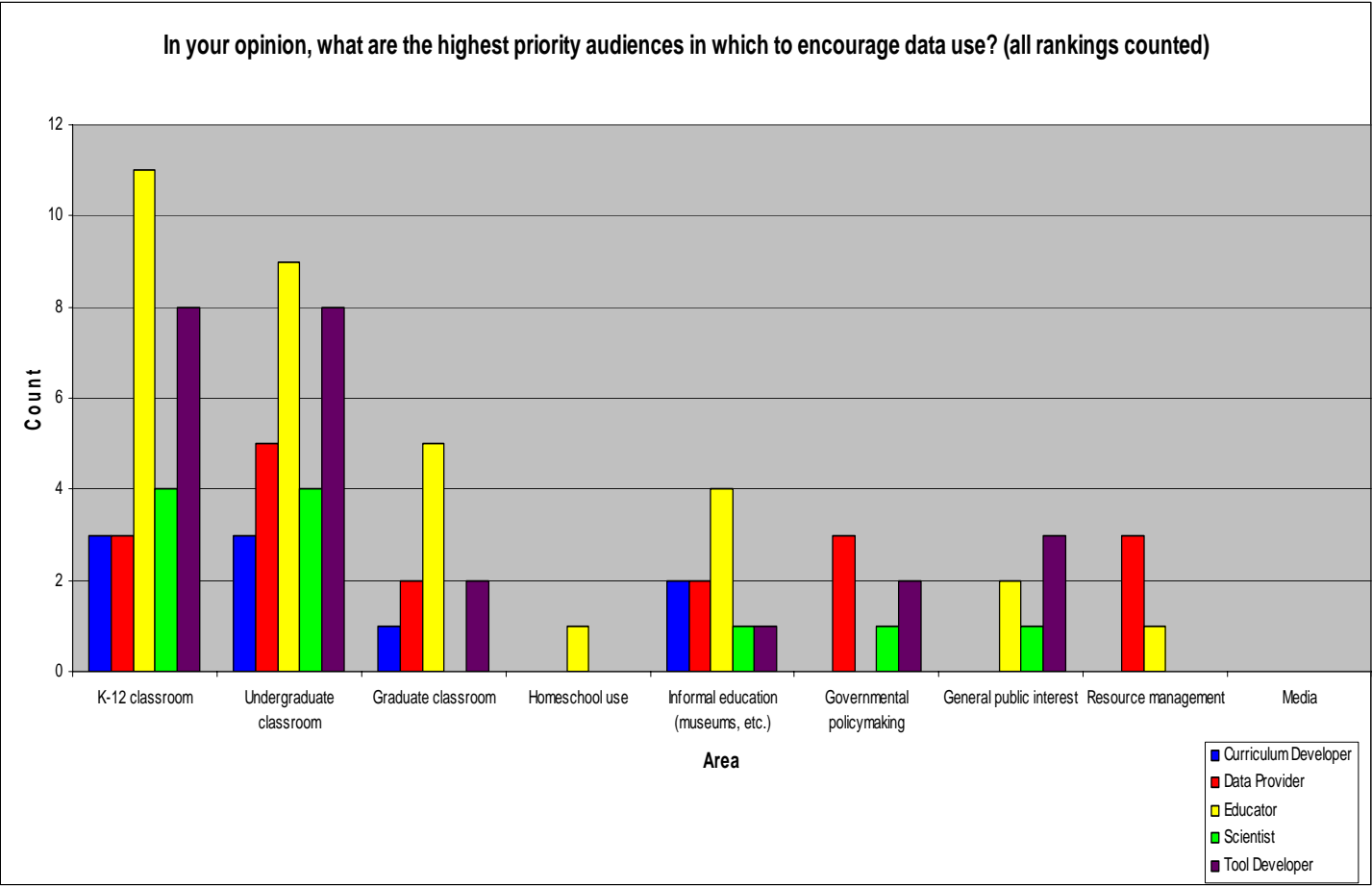
Figure 3-24. Highest priority audiences in which to encourage data use (ranked 1, 2, or 3), split by respondents' professional role.

Daily and Final Surveys

Respondents

Responses to the daily questionnaires and the corresponding questions in the final questionnaire are described together in the first part of this section. Analysis of the remainder of the final questionnaire is at the end of this section.

Monday and Tuesday's daily questionnaires had the most respondents (54 and 59, respectively). See Figures 4.1 and 4.2. There was some drop-off in the response rate for most roles on Wednesday (48), probably due to people leaving early. There were 47 respondents to the final questionnaire.

The most dramatic change in the representation of professional roles was a 42% drop in the number of scientists, comparing Wednesday to Monday. The change in participant makeup, however, was not as dramatic as at the 2004 workshop when most technology and science professionals left by the final day. However, as was seen in 2004, educators were still the largest group taking the final survey.

Figure 4.3 displays the work teams of respondents to the final questionnaire. All teams had at least two members left by the final survey.
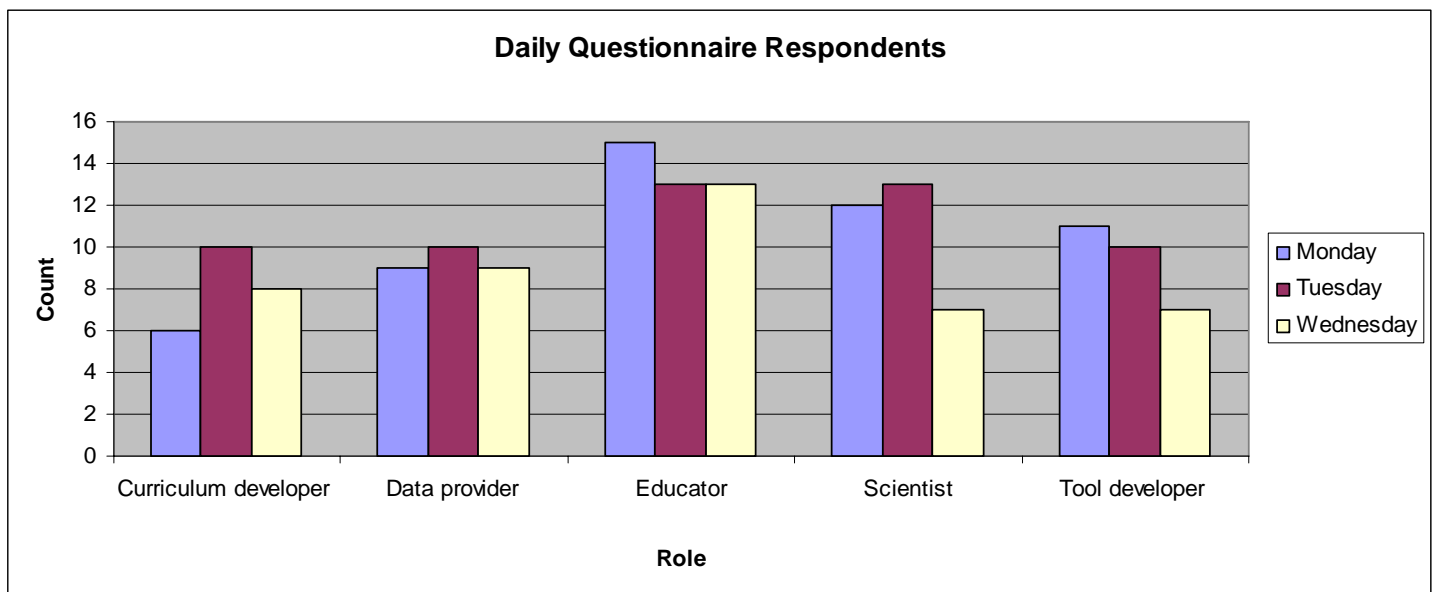
Figure 4.1 Respondents to daily questionnaires, split by role.
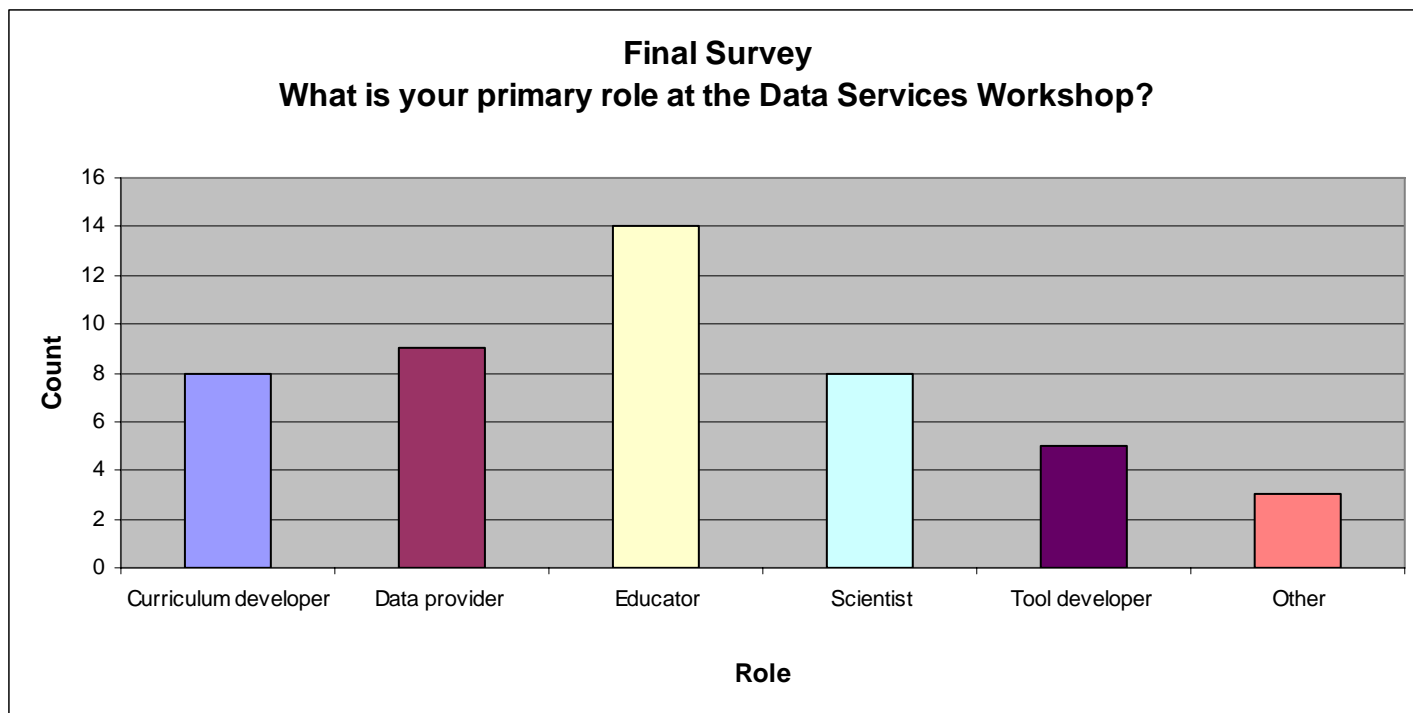
Figure 4.2 Respondents to final questionnaire.
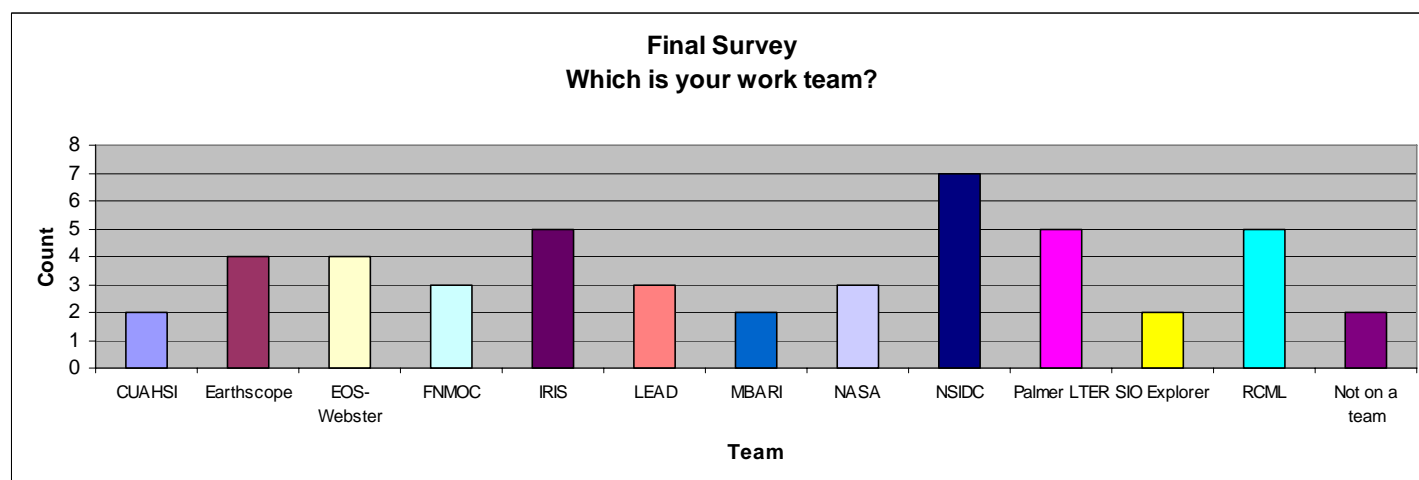
Figure 4.3 Work teams of respondents.

The team breakout sessions were widely regarded the most valuable aspect of the workshop.

Each day, the team breakout sessions were considered the most valuable part of the schedule (see Figures 4-4, 4-5, and 4-6). **One talk on Monday and one on Tuesday (Monday's keynote and Tuesday's EarthSlot talk) were regarded as the second most valuable features of their respective days. On Wednesday, networking with those in other fields was the second most valuable category of the schedule.**

The final survey confirmed that, overall, the breakout sessions were the most valuable (see Figure 4-7). **However, the second most valuable feature overall was networking with those in other fields. This category is certainly something that would be encouraged by the breakout sessions so its high rating in the final survey makes sense.**
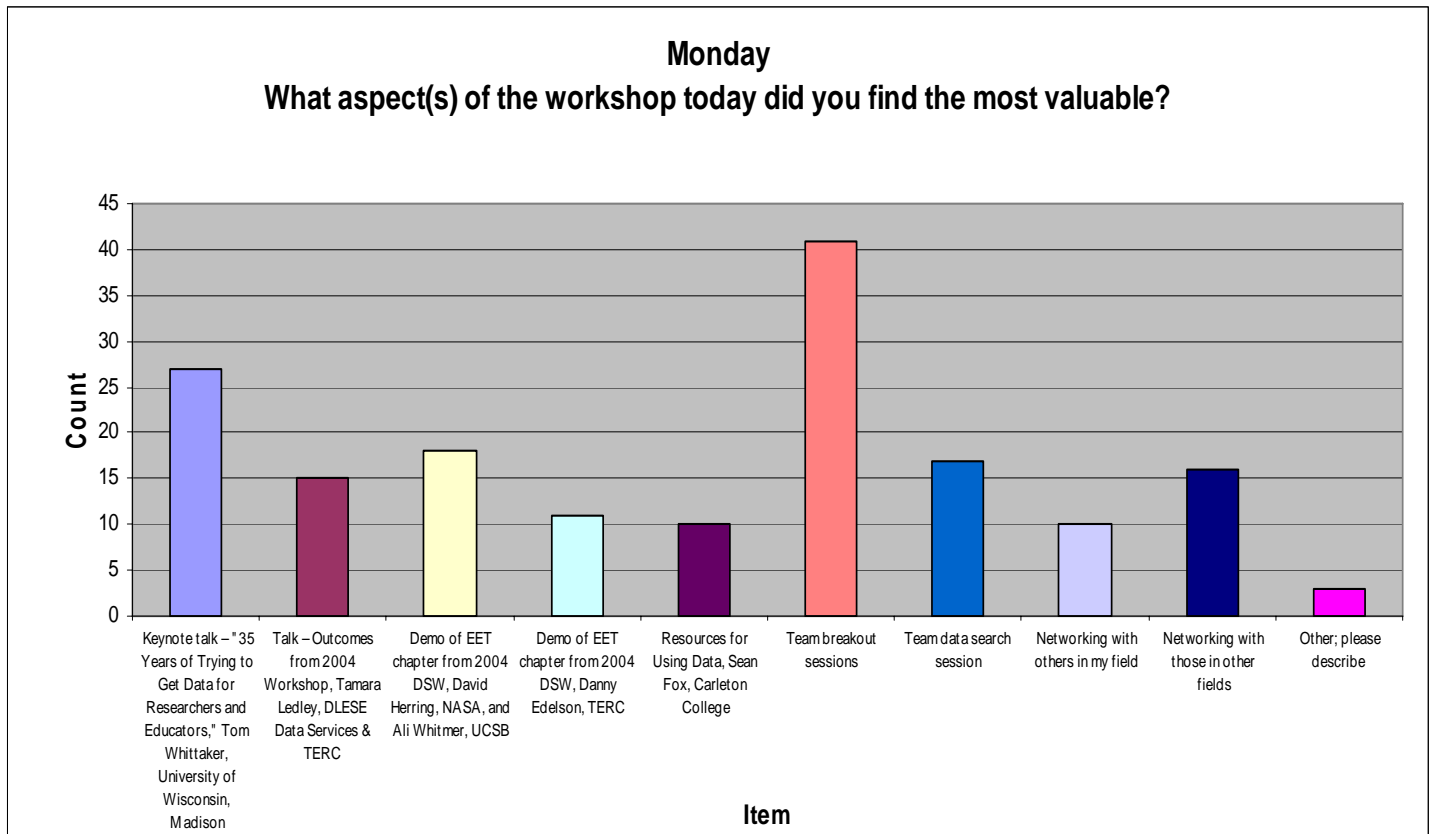
Figure 4-4. Most valuable aspects of Monday's schedule.
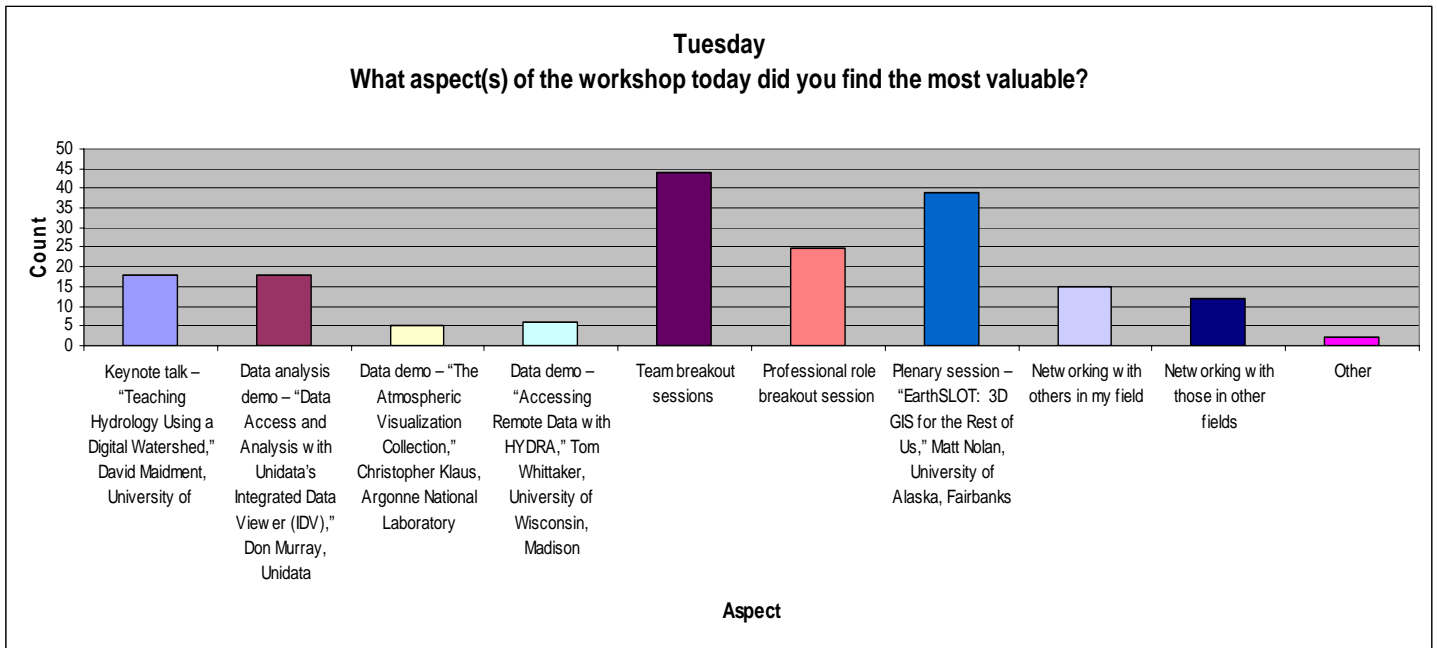
Figure 4-5. Most valuable aspects of Tuesday's schedule.
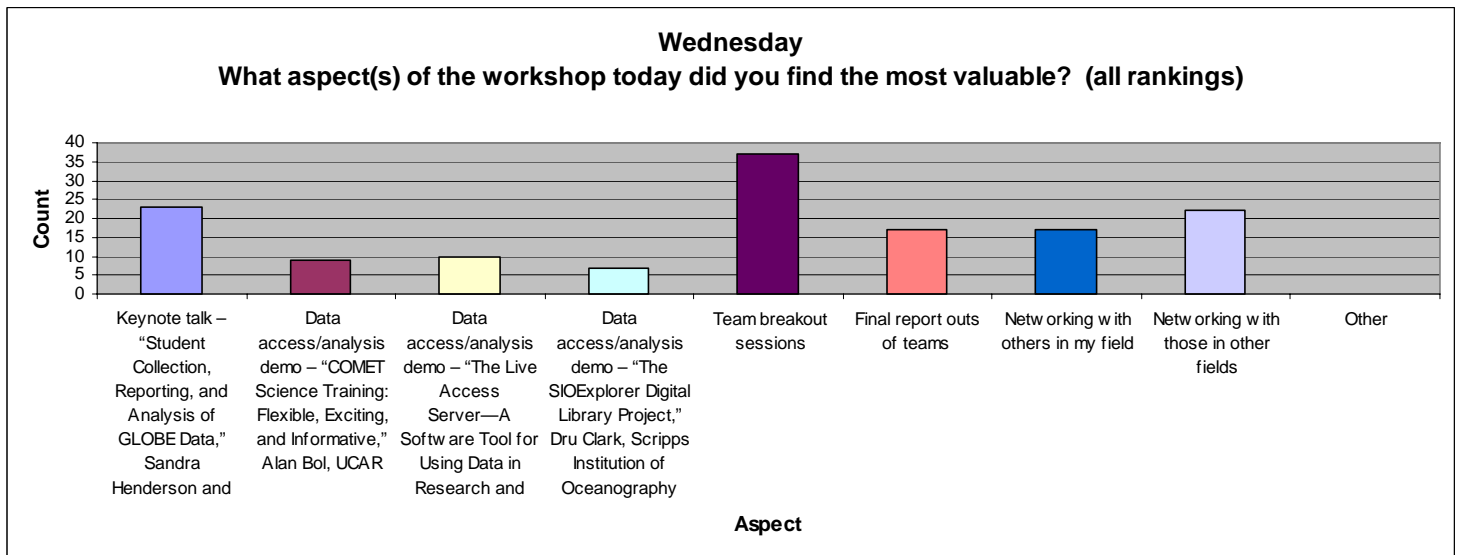
Figure 4-6. Most valuable aspects of Wednesday's schedule.
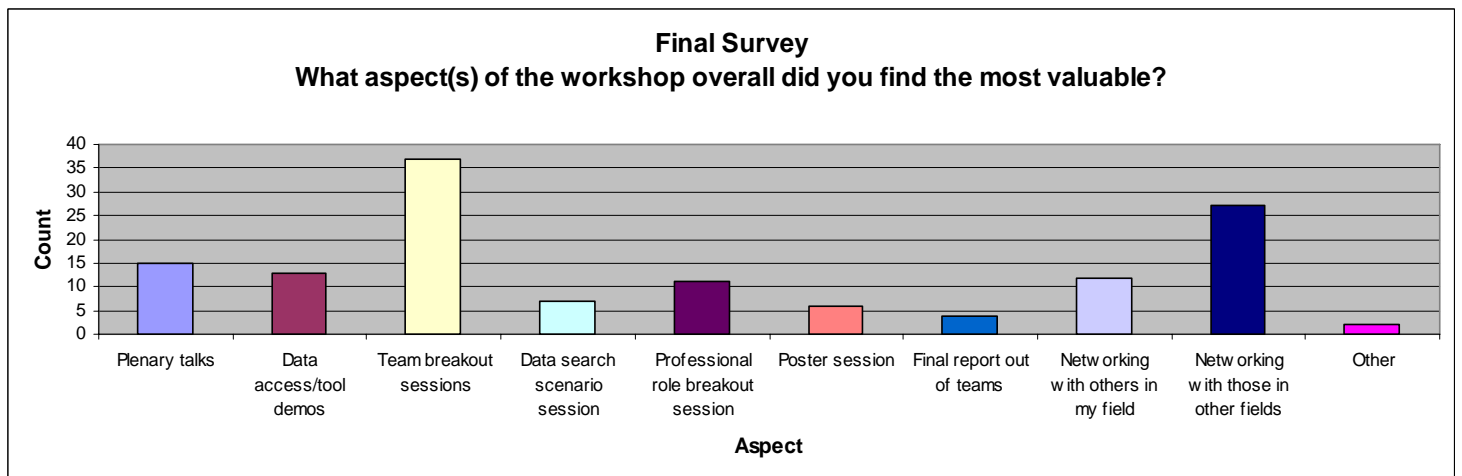
Figure 4-7. Most valuable aspects of workshop overall.

29

When the responses to the final survey are disaggregated by role, general agreement is found for most areas (see Figures 4-8 and 4-9). **Breakout sessions and networking with those in other fields were generally the most valuable aspects of the workshop to most participants. Activities that were not considered highly valuable were the data search scenario, poster session, and final report out of teams.** The bar graphs are shown in Figure 4-8 with the actual counted votes and in Figure 4-9 with the percent of votes for each professional role.
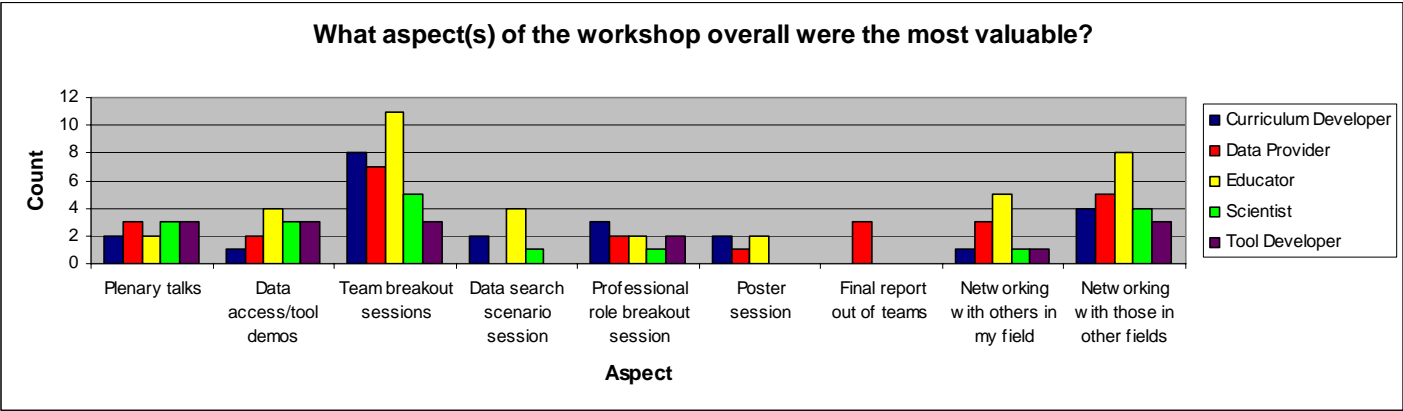
Figure 4-8. Final survey of most valuable aspects of the workshop overall, split by respondents' professional roles.
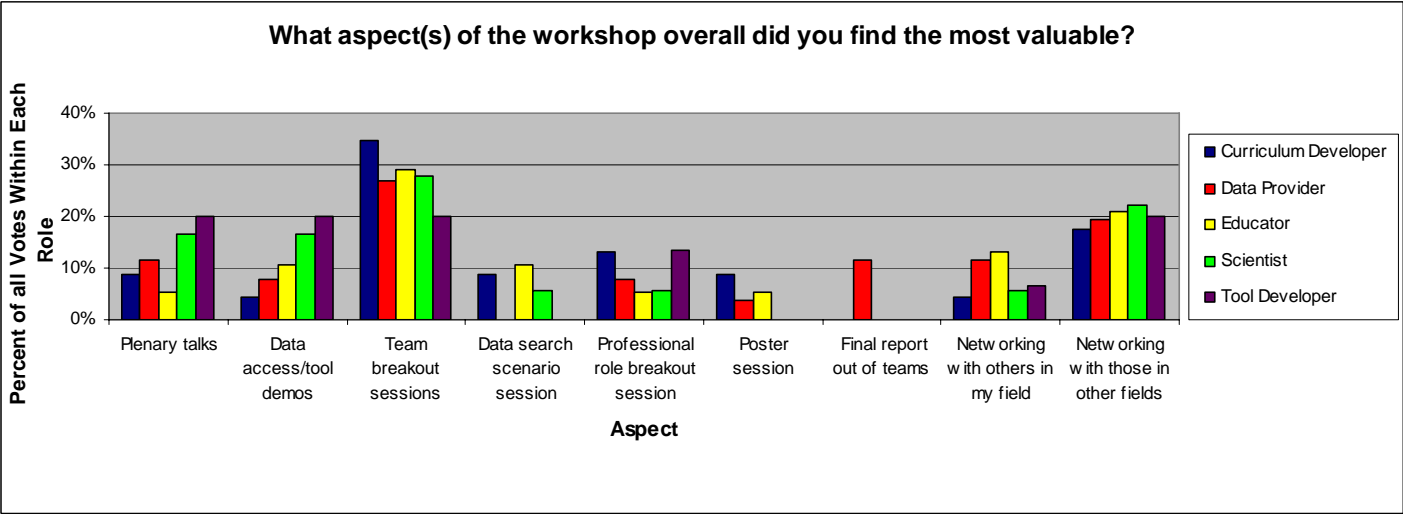
Figure 4-9. Final survey of most valuable aspects of the workshop overall; graph shows percent of the votes within each professional role.

Participants were asked to rank their choices as priority 1, 2, or 3. Details of the ranking results may be found in the Appendix.

The education/technological mix at the workshop should emphasize education more.

Every day and on the final survey, the mix of the workshop was seen as not emphasizing education enough. This is similar to the results from the evaluation of the 2004 workshop. There was also agreement that there were too much emphasis on talks and too little on the team breakout sessions.

Except for Monday, there was also agreement that too much emphasis was placed on demos for data access and tools. The emphasis on tools and data as topics seemed about right. The final survey also showed that slightly too much emphasis was placed on the evaluation surveys. See Figures 4-10, 4-11, 4-12, and 4-13 below.
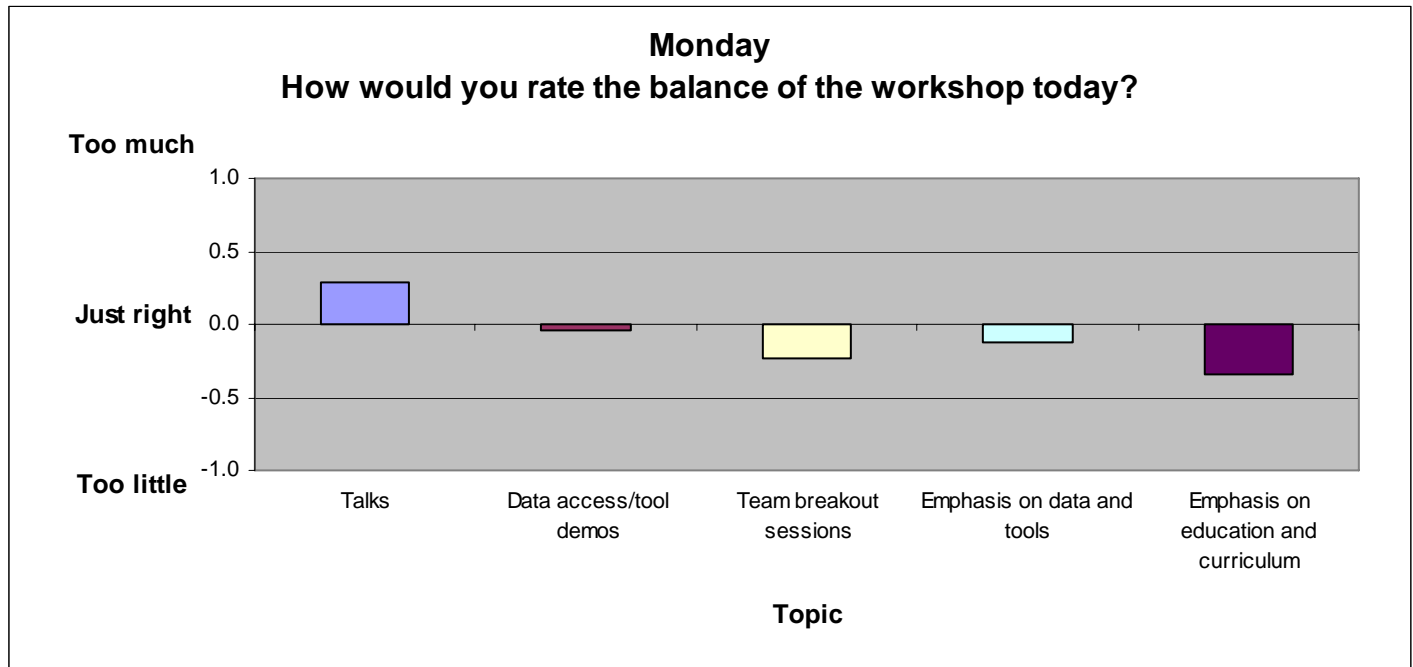
Figure 4-10. Balance of Monday's session.
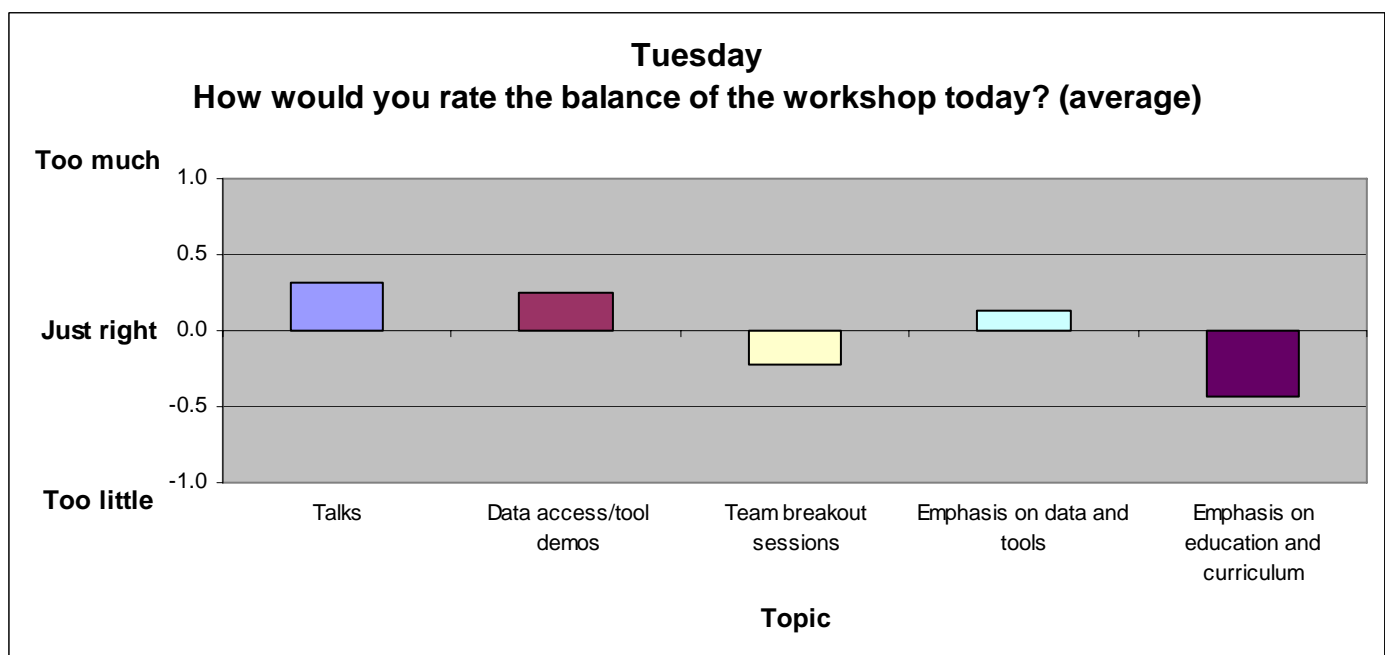
Figure 4-11. Balance of Tuesday's session.

Wednesday
How would you rate the balance of the workshop today?
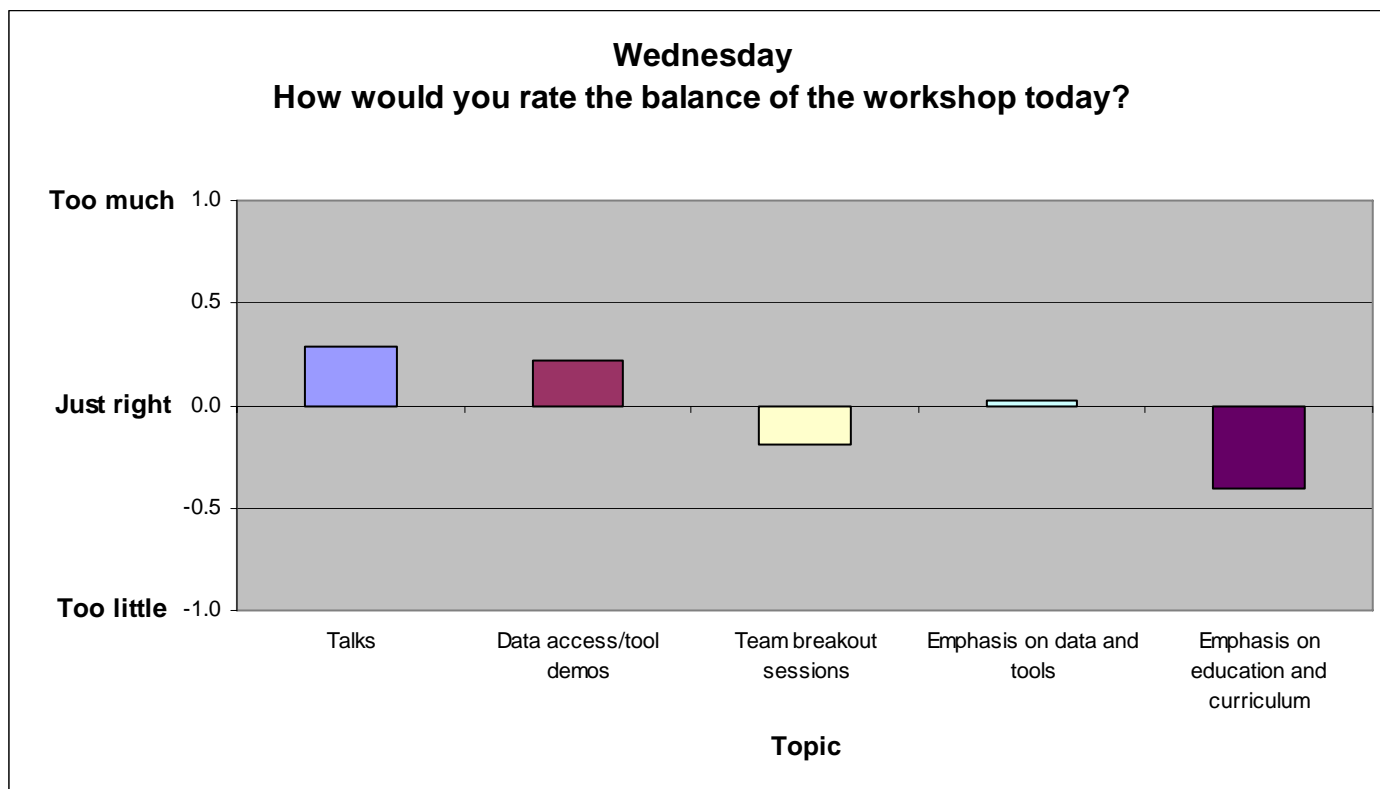
Figure 4-12. Balance of Wednesday's session.

Final Survey
How would you rate the balance of the workshop overall?
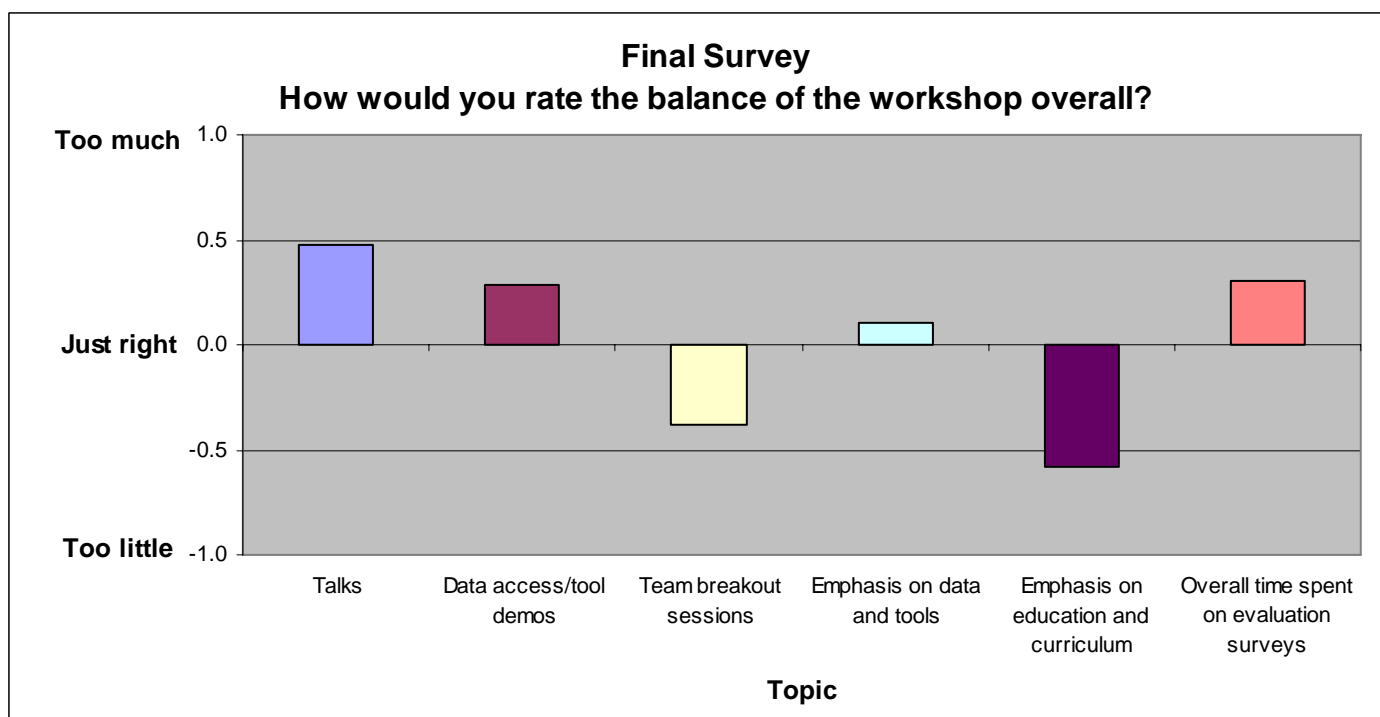
Figure 4-13. Balance of the workshop overall.

When the data from the final survey are disaggregated by role (Figure 4-14), there is general agreement on the overall balance of the workshop. The outstanding data point shows that curriculum developers as a group thought there was too much emphasis on data and tools. It's also interesting to note that, as groups, the tool developers and educators thought the balance was closest to "just right".
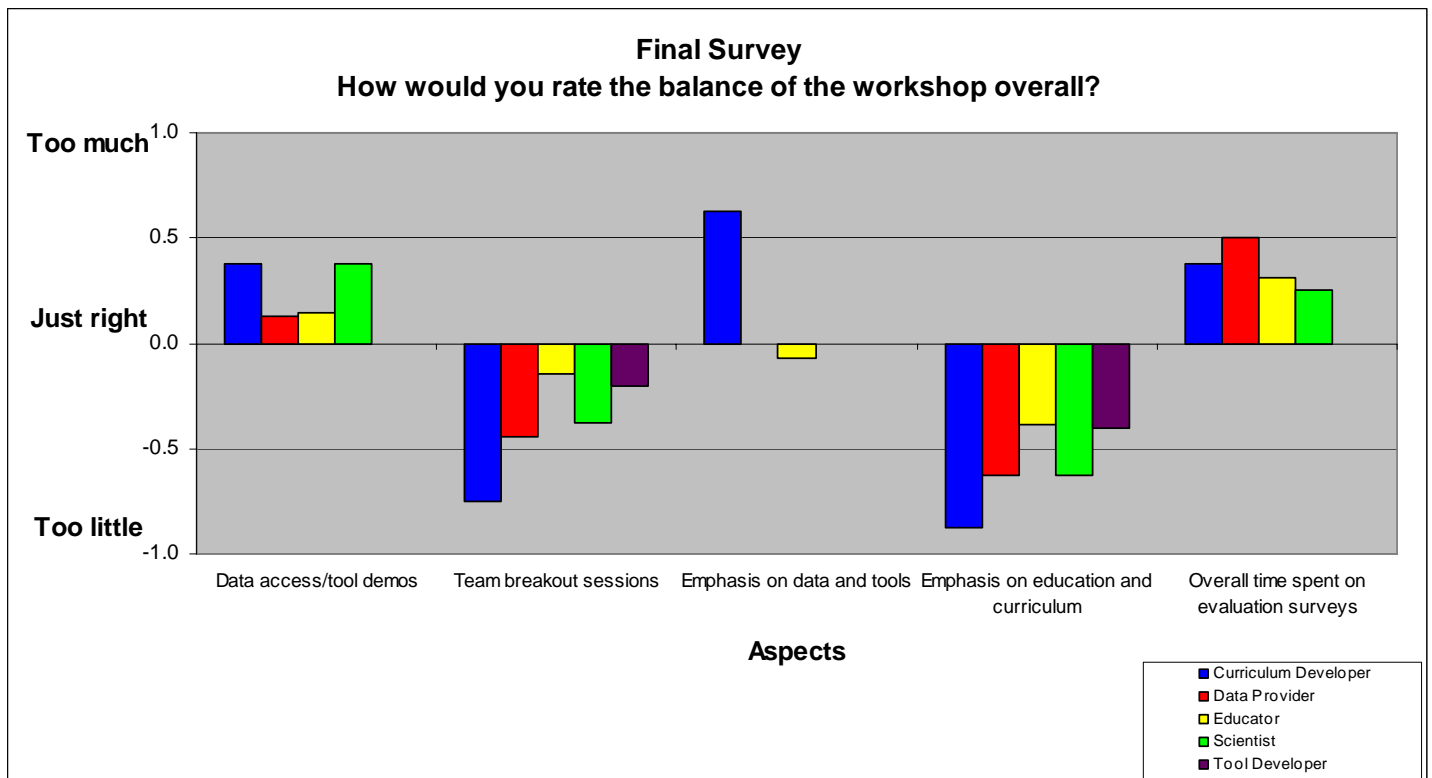
Figure 4-14. Balance of the workshop overall, split by respondents' professional roles.

Suggested changes to the schedule reflected the prevailing desire for more breakout time, fewer (and shorter) talks, and more time in breaks for networking.

Other suggestions included having "a short session (5 min) of sharing what other groups did or were thinking of." One participant asked for more group discussion time after each talk.

Several people asked that the talks be broken up with more time for active participation in between. As one participant phrased it:

> "I think it would have been better to sprinkle the morning talks/presentations among opportunities for more active participation. If I had learned more about what I would be expected to do, I could listen better to how others have been successful in the past. "

There were a few suggestions that, instead of demonstrations, offer participatory lab-type demonstrations of tools and data. Two people suggested that concurrent talks on data and education would allow the "techies" to be in one session, while the educators are in another that is of more interest to them.

One person wished that the GLOBE talk had been on Monday, to set the stage for the workshop, giving "a context for creating a module, keeping education standards, needs and practicality in mind."

Two people mentioned the difficulty of having team members leave early. This was an issue at the 2004 workshop as well. One person suggested that having the team wrap-ups before the final-day talks would have been a step to ameliorating this problem.

Suggested changes to the topics emphasized more input from educators and more context for the development of the EET chapter.

The non-education professionals requested more direct information (both before the workshop and during it) on data use in the classroom, more perspective from teachers on what exactly is needed to make data work for them, and information on case studies where data use has actually been incorporated into a curriculum. One suggested that instead of tool demos, "How about [a presentation on] results of use of tools in the classroom?"

Many first-time participants expressed a strong wish that they had been provided more information in advance that participants in the workshop would be developing an EET chapter, more background information about the EET and DLESE, and a clearer picture of how the team structure is employed at the workshop. One first-time participant said, "I felt as though I'd walked into the middle of a conversation. More information before arrival would have been appreciated (i.e., what's an EET? If I work on developing one, what are the criteria, etc?)."

Another participant suggested that more description be provided "in greater detail [on] the EET and the template we'll use. The demos were great but I had already been exposed by Luann. Others in my group had a hard time grasping where we were headed." A similar comment was phrased in this way: "Info on EETs should really be made more clear. Our group spent 1.5 days trying to figure out what was wanted."

One scientist suggested that more information be provided for those in his professional role. "I have no idea how to continue collaborating with DLESE and/or EET - what funding is available?" Another scientist felt a bit out of the loop, stating, "Educators have been presented with data sets and educational resources, tool developers have been introduced to different tools, but scientists have not been given examples of educational models and approaches used [in] K-12 [classrooms]."

Non-technologists expressed feeling "lost" during the data/science/technology-oriented talks and demos. One summed it up in this way:

> "The general sharing of tools and data happens at a level, and in a language, that leaves at least some educators and curriculum developers out of the loop. When techies talk to techies, it maybe should not happen in mixed company. "

There were more requests for a hands-on format for the demos, perhaps in small groups. One participant said, "[The] data demos need [a] new format - very cool stuff but need hands on."

The main logistical change requested was projectors in each breakout room.

There were difficulties mounting flipchart paper in the breakout rooms, and projectors were requested from several groups that did not have one. Also, having only one breakout group per room was essential due to noise levels.

There were also repeated requests for juice and coffee at all breaks.

The poster session was moderately effective.

Question 6 of the final survey addressed the effectiveness of the poster session. The mean rating of the poster session on a scale from 1 to 5 was 3.5. There wasn't much difference between professional roles in how the session was ranked (see Figures 4-15 and 4-16).
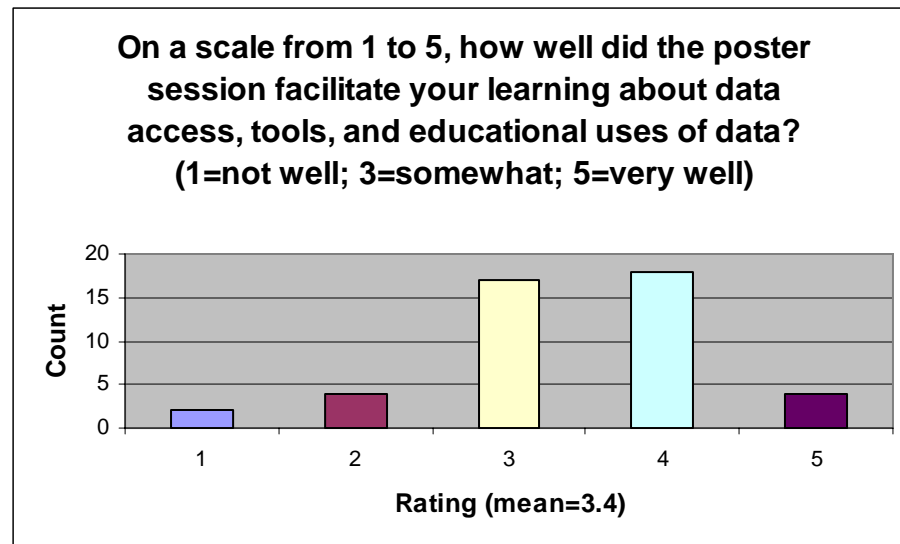
Figure 4-15. Rating of the poster session.
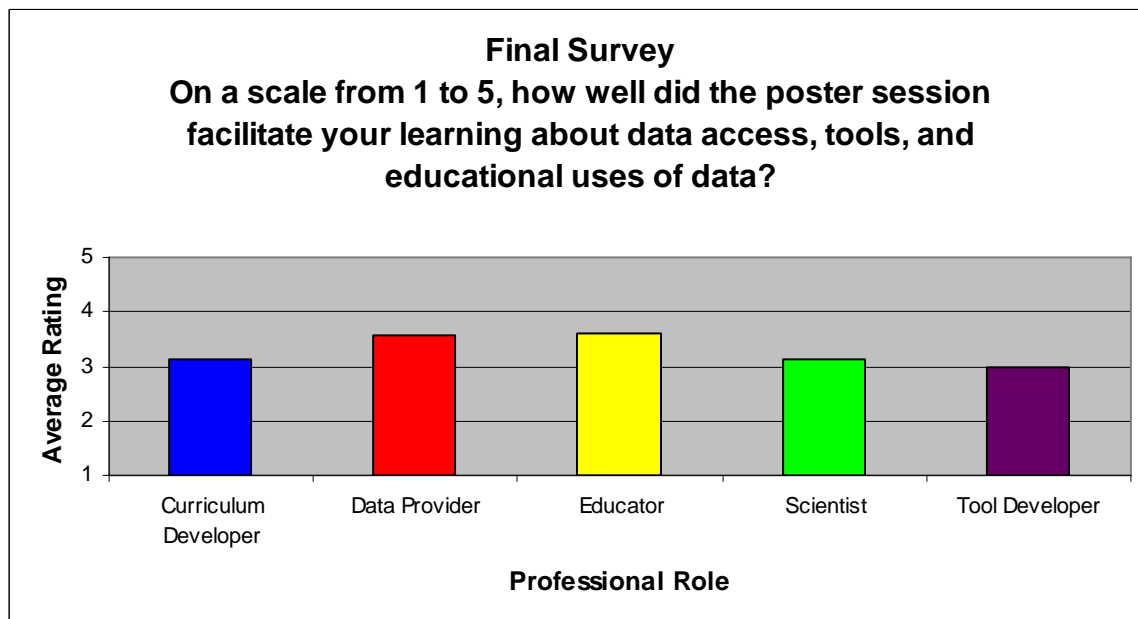
Figure 4-16. Rating of the poster session, split by respondents' professional roles.

Participant comments on the poster session were varied.   Several people appreciated the chance to informally meet and get to talk with each other in a reception-type atmosphere (with food and drinks).

The most common complaint was that those who had brought posters did not have time to walk around the room and visit with others. A few people commented that there were not many posters, given the number of attendees, and that very few of the posters presented were "actually about specific tools or educational uses of data." One presenter commented that they hadn't been given any information about the theme of the poster session and, if they had known more, they would have brought a different poster.

Suggestions included each presenter giving a one-minute overview of their poster or everyone having a one-page summary of their poster available for participants to take with them. More detailed information on the poster session can be found in that section of this report.

The teams worked very well together.

Question 7 asked about the breakout team. **There was almost complete agreement among participants that the teams worked very well together at the workshop** (See Figures 4-17 and 4-18). On a scale of 1 to 5, the mean was 4.8.
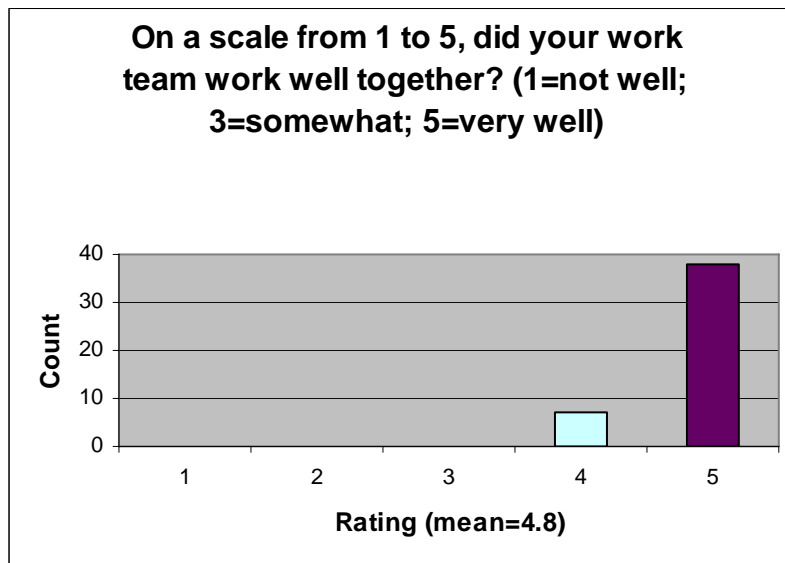
Figure 4-17. Rating of how well the teams worked together.
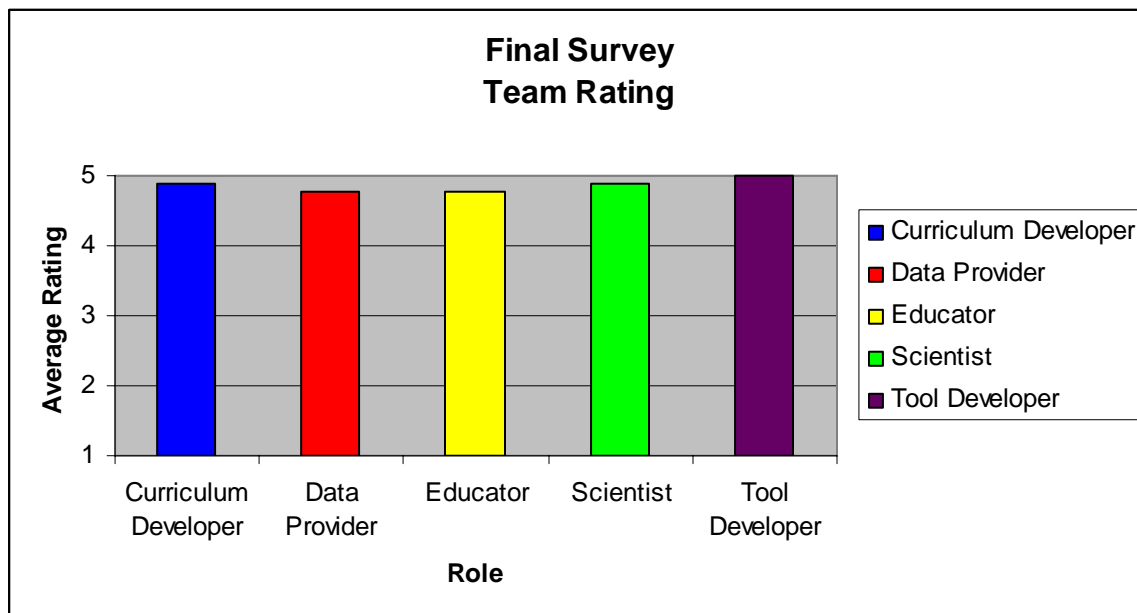
Figure 4-18. Ratings of how well the teams worked together, split by respondents' professional roles.

Participants look forward to completing their EET chapters and other collaborations.

Question 8 of the final survey asked, "What do you plan to do in your work as a result of this workshop that will facilitate the use of data?" **Respondents had lots of ideas, including plans for the EET chapter development project, educational applications, networking, tool development, and data work.**

EET Project

Seventeen respondents said they planned to work with their team to complete their EET chapter and other projects to bring data into the classroom. Several specified what their particular task is in the EET chapter.

Education Applications

Two educators specifically mentioned they would be doing outreach to other teachers; one said, "I will introduce teachers in workshops to the EET chapters that are currently available." Another specified, "I am implementing the EET chapter with our data tool in my classroom instruction immediately after the workshop." One explained, "[I will] explore the organizations and tools and data presented in this workshop, to see how I could use for [the] classroom."

Other participants specified the data-in-education applications they planned to work on. One said, "[I am] working on info pages for sea ice that will be a (hopefully) useful educational reference." An undergraduate educator commented, "I thought of several specific ways I need to have my undergrad students use data." A tool developer detailed, "[I will] make some modifications to the tools used to access data to facilitate access by educational users." Another said, "[I plan to] investigate ways to develop (and fund) new interfaces for accessing data targeted to educators, and specialized web pages with context geared to educators and students."

Networking and Partnerships

Several respondents commented that they would continue to network and build partnerships, based on their experience at the workshop. A curriculum developer described plans to "act as an ambassador for integrating technology and data, assess the implementation of this chapter at our local site and redesign the chapter to create an effective and useful EET outcome." Another explained the following plans:

> "After exploring tools, data access demonstrations, I plan on holding some brown bag presentations for faculty. I would also like to re-visit some of my own projects and rethink my approaches to encourage more data use. Finally, I'd like to show MyWorld to other university depts. that aren't (??) in the GIS world but would benefit from GIS use."

Work With Data Tools

A dozen participants mentioned that they planned to use or enhance tools they had learned about at the workshop. A curriculum developer specified, "To increase use of my existing ArcView-based curriculum, I will create a MyWorld GIS-based version." A scientist said they would "attempt to access archive data with IDV for use in COM2T modules." A data provider mentioned plans to "make some modifications to the tools used to access data to facilitate access by educational users."

Data Work

Many respondents specified ways they intended to increase or promote the use of data in education. A data provider plans to "work to help establish/merge/improve standards for data." An educator said they would work on "increased use of data, data tools and visualization, [and] motivate more teachers to move on this direction and make use of EET and DLESE." Another educator mentioned a challenge, to "try to find a way to use data without student provided computers."

Printed materials received for the meeting were slightly above average.

Question 9 asked participants to rank the value of the workshop program and other printed materials distributed at the workshop. Results are summarized in Figures 4-19 and 4-20. **The average rating was 3.8 on a scale of 1 to 5, which is above average. By roles, data providers were the most satisfied, while scientists and curriculum developers were the least satisfied.**
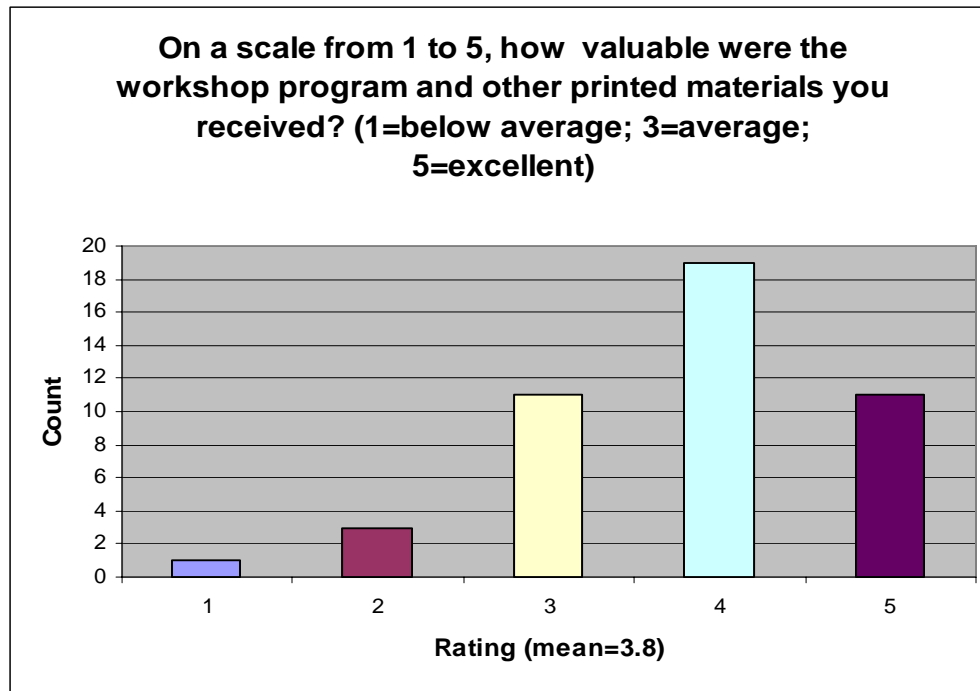
Figure 4-19. Rating of the printed workshop materials.
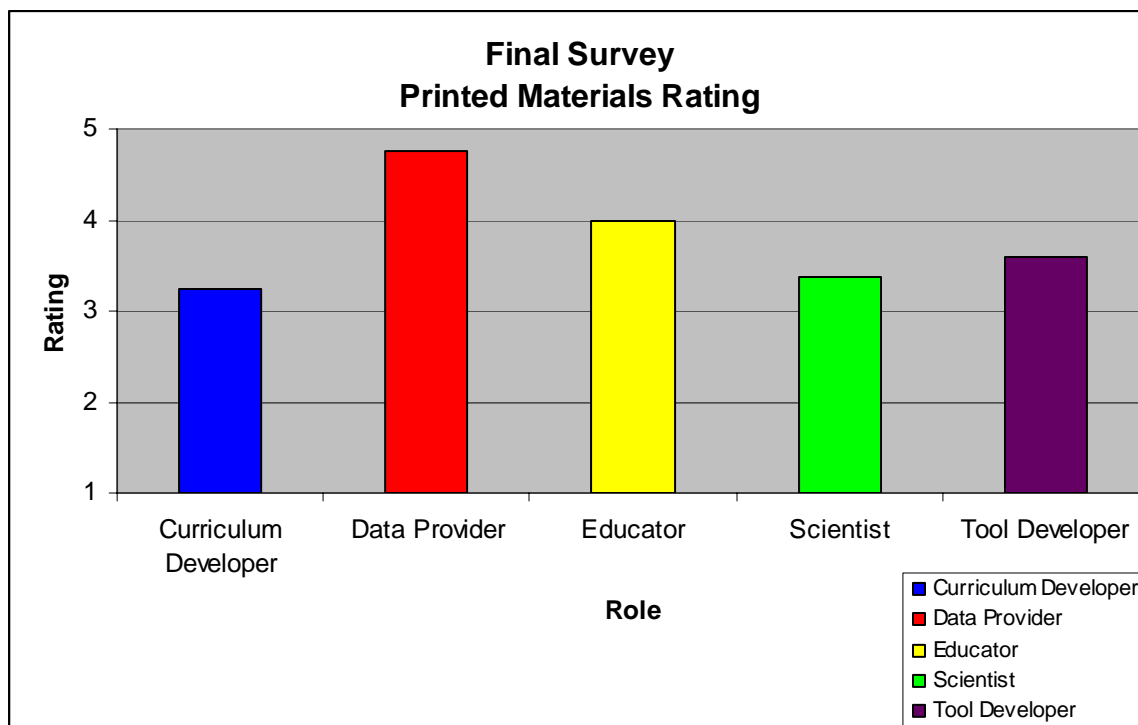
Figure 4-20. Rating of printed workshop materials, split by respondents' professional roles.

Several participants wished they had been sent workshop materials before the workshop so that they would have been better prepared. One commented, "I felt the need for more preparation in chapter development prior to the workshop or even during (not just for the facilitator but everyone needed to know how the chapter was organized)." They suggested that the program and other materials could have been made available online as pdf files. Another thing suggested by two participants was that handouts (either PowerPoint printouts or one-page summaries) could have been provided for all presentations.

The workshop website and meeting facilities were ranked above average by participants.

Questions 10, 11, 12, and 13 addressed the success of the workshop logistics and websites (see Figures 4-21 and 4-22).

Online registration was found to be easy to use by almost all respondents. The Swiki was considered useful by most, and the information website slightly less so.

The meeting facilities, housing, and food were ranked well above average overall. The ratings of the various logistics were quite consistent across each individual role, with curriculum developers and data providers ranking the logistics most highly.
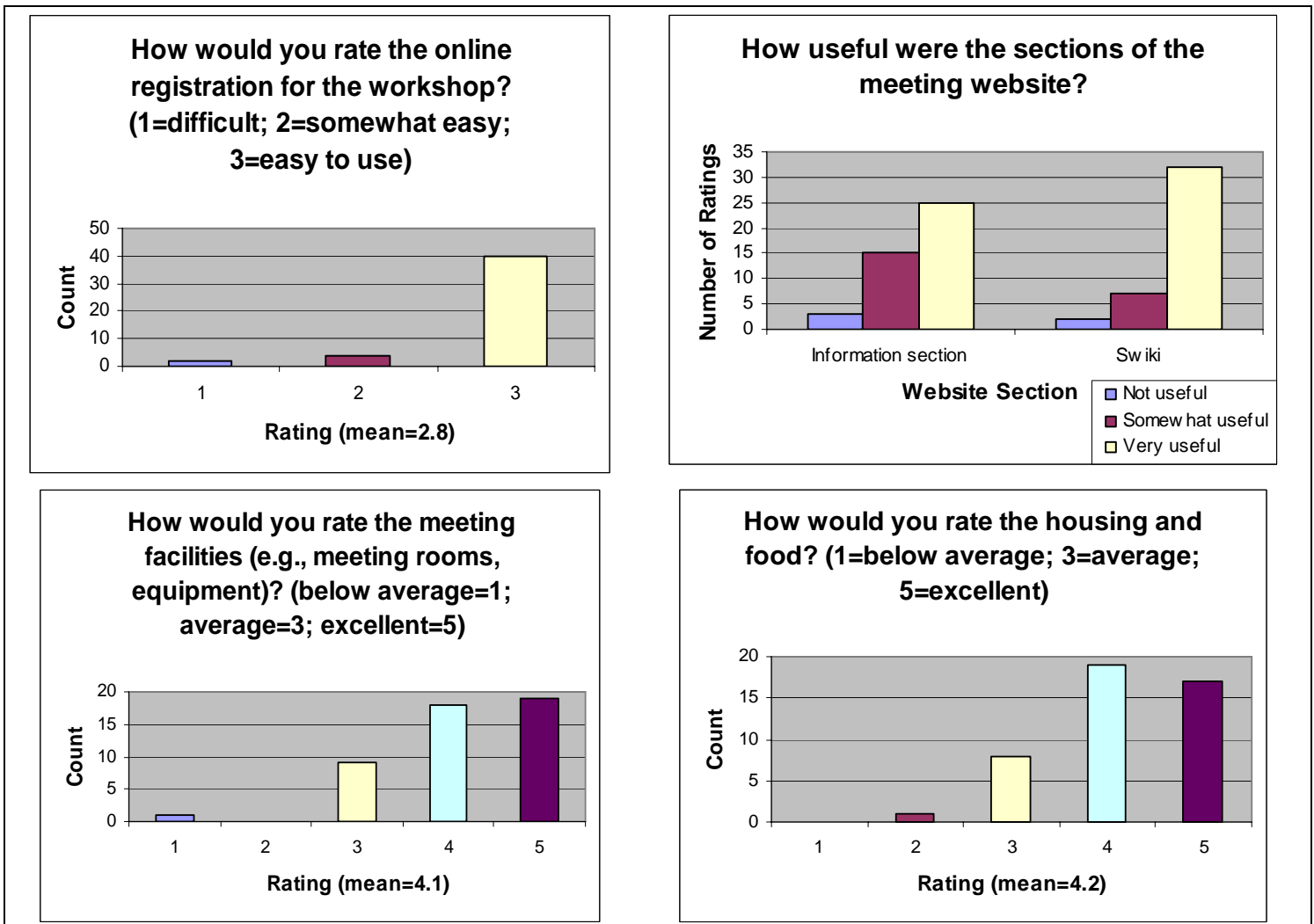
Figure 4-21. Ratings of online registration, website, facilities, housing, and food.
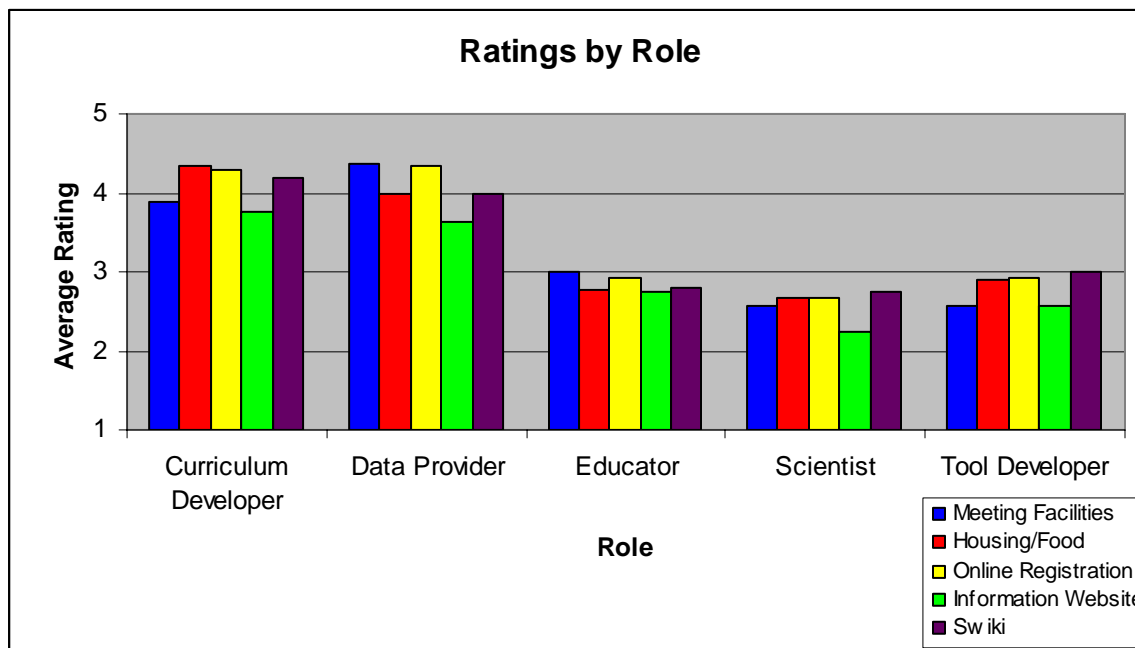
Figure 4-22. Ratings of online registration, website, facilities, housing, and food, split by respondents' professional roles.

A couple of respondents had trouble with the online registration. One commented that there was no confirmation sent, and another requested a way to modify registration information online. One participant had a terrible time finding the workshop information from the DLESE home page. Several needed more information on the workshop schedule and structure before they could complete the registration to their satisfaction.

The information website was also difficult for one participant to find, and several people requested more information about the workshop itself (schedule, goals, team details) so that they could prepare more thoroughly. Two people asked for transportation information (airport transport options, maps of the area). Several people asked if the information could have been provided much earlier.

Quite a few people commented on how much they liked the Swiki. One participant suggested that it be available earlier so that all participants could familiarize themselves with its use before arriving at the workshop.

One participant summarized their concerns in this way:

"I looked through my DLESE-related e-mails and did not receive the swiki URL or access to the swiki and agenda, nor did my colleagues. I would have appreciated receiving an agenda for the meeting prior to check in at the meeting. Also, I didn't know we were committing to create an EET and the development timeframe. I'm excited about doing it, but would have appreciated having learned that upfront, and what an EET is."

Nine participants commented on how nice the location and facilities were for the workshop. Six of the suggestions for improvement had to do with the fact that wireless was not available in the hotel rooms for no charge or that they had difficulties getting the wireless to work in meeting rooms. There were also several requests for a projector for each breakout group. One person commented that the tables in the main meeting room were too small for the number of people attending. A few people commented that temperature regulation in the rooms was problematic. Two people said they had trouble with the altitude.

Comments on the food were that it was good, but not great; a few people requested more vegetarian options and more diversity of choices at breakfast. Several commented that there was no ventilation and/or temperature regulation in the hotel rooms. Again, a few had trouble with the altitude.

Summary comments on the workshop included appreciation for the workshop and some detailed suggestions for improvement.

Appreciation

Many participants were delighted with the chance to bring the different professions together for this common goal. One commented that it was "a model to be emulated across the sciences." Another said, "I think this is a remarkable concept - collecting scientists, techies, educators, curriculum people to complete a specific task - is unique and I should think effective." One participant stated it brought up the idea of having similar workshops on more local levels.

Many of the comments were highly supportive of the entire process, well expressed by the statement, "I though it was a good and very useful workshop. The planning, facilities and support were all well thought out and appreciated."

There were many comments about how much participants enjoyed being a part of their teams, and how it was better than they could have expected. One summarized it as, "Great meeting. The most valuable workshop in a long time. Great practical outcomes."

One educator supplied this perspective, "As a teacher, simply knowing that the professional worlds of data providers and science professionals support our efforts in the classroom is invaluable!"

Suggestions for increasing education focus

Several people reiterated that the schedule should focus more on case studies by educators of outcomes of EET chapters and other data use projects in the classroom. There were requests that the talks be more focused on the EET chapter development.

One respondent suggested "presenting an EET module with the audience being the 'class', actually working through it from start to finish. [It] would be very useful for scientists, data providers and tool developers to see."

Another respondent suggested a three-step process to increase educational effectiveness:
> **"I suggest we begin by analyzing typical topics presented in "typical" bio, chem, phys, and earth science classes nationwide. Simply looking at a few top selling texts in each subject will reveal what most teachers "cover" in class.**
> **Next: brainstorm to I.D. datasets that could support the teaching of these topics.**
> **Last: develop "EET chapters" to support each topic and correlate each EET chapter to each of the major texts used in each course."**

One participant emphasized that greater educator involvement in the poster session would be good. They commented, "Having never worked on curriculum development (I'm data provider/scientist), it was extremely informative for me to hear from teachers what data they found interesting and how they used it."

A specific topic was suggested: "[We] needed a talk or two on relevant educational models from the literature on teaching and learning."

As a case study approach, it was suggested that we "hear more from teachers about how they use/find use what's available, what works and what doesn't, what they need and how to motivate adoption by teachers. In particular, [could we] get early adopters [of the EETs] to give testimonials.

Another respondent detailed what could be added from the educational perspective:
> **"How to better highlight educator component: perhaps one way to accomplish this is to ask educators to describe how they successfully implemented data analysis in specific classroom settings including (1) what intrigued them about the data in the first place (2) how they learned to use the tools (3) how they found a way to incorporate the project(s) within existing curriculum (4) how students responded to the classroom project (5) in retrospect, how could the project be improved to encourage student learning. It would amount to something similar to what we heard during our morning sessions, except the focus would be on the process by which the data and tools have found successful implementation in classroom."**

One specific request was to "require at least one learning assessment rubric to be in the deliverables of the breakout teams."

Scheduling suggestions

There were suggestions for hands-on sessions where participants can try out the tools being presented.

It was mentioned that the workshop offers "the opportunity to turn frustrations and technical jargon into powerful learning opportunities for non-technical meeting participants by organizing special tutorial session for them. [This would be effective] since I think most of us would want to learn more about the data tools."

An ice breaker was suggested "to encourage people to mix with others in addition to their work group."

One participant suggested adding workshops for collection developers, focusing on developing educational content, using java/flash tools, and building a community of educational collection developers.

Pre-conference preparation

There were more requests to "let participants know ahead of time what will be expected, both at the workshop and after [(e.g.,] how much effort will be required afterwards, etc), [including distribution of] a sample EET ahead of time." Another participant summarized it as follows:
> **"I would have liked more info up front regarding expectations for the workshop. (i.e., 'DLESE is sending you to an all-expense paid workshop in [Breckenridge] where you will meet with educators, data providers, etc. We ask you to commit yourself and your time to creating, developing and publishing an education module. The process will begin at the workshop and will continue periodically for 6 to 12 months.' Then we would know what to expect and how to prepare before we arrive at the meeting!"**

There was a request for a detailed introduction to DLESE, the EET, Unidata, SERC, and TERC to provide context for the presentations and chapter development.

One participant specifically suggested the following improvements and offered these questions:
- "Provide pre-conference info to help us prepare (team members, team info, EET expectations);
- [Offer] more information on pedagogical models and approaches;
- [Give information on] assessment of EET usage - why are we doing this and does it work?;
- [Provide] more time to discuss things with others in my field - what works, what doesn't etc.;
- [Consider the] possibilities of imperative design - why [do we] continually, generate new stuff rather than fixing existing materials to be more useful?
- Teachers should not be considered end-users but "beta-testers".
- Developers don't always know whether planned outcomes actually work - we need to re-use it rather than only creating new materials that is not designed on actual usage.
- Finally (I know this is a lot), I think it is important to discuss transparent technologies - funding and using data or having to install and use new software can be scary. How do we get past that?"

Logistics

The main suggestions regarding logistics were that in breakout rooms they needed space and the ability to hang flip-chart sheets. A laser pointer was requested, as were projectors for all breakout sessions.

Poster Session Survey

Instrumentation Problems

There were instrumentation problems with the poster session questionnaire. The questionnaire was designed ahead of time based on the poster registration information given at registration. Since there was limited follow-up with presenters, there were no-shows, there were several additional posters, and (probably most problematic) many of the presenters had changed the title or subject matter of their posters from what they submitted at registration. Hence, the questionnaire was difficult for attendees to use since there was not a one-to-one correlation between the posters and the survey. If poster locations had been designated and labeled ahead of time (e.g., "Poster space 11"), these locations could have been used on the questionnaire and some of the confusion could have been prevented.

There were also logistical problems with distribution and collection of this survey. Since the venue was a reception with multiple entrances and exits, it was difficult to give questionnaires to all attendees.

There was also more resistance to completing this instrument than the others; the session was more of a networking opportunity and having an evaluation instrument to "grade" the posters seemed intrusive to some participants; one respondent said, I didn't feel comfortable rating the posters." The average number of posters that weren't rated on each returned survey was 5 out of 18 (adjusted for the poster that was listed but not present). There may also have been some confusion about which poster corresponded with which listing on the questionnaire; see discussion of visitation below.

Poster Session Results

Respondents to Questionnaires

There were fewer respondents (24) to this questionnaire than the others. The role distribution is seen in Figure 5-1.

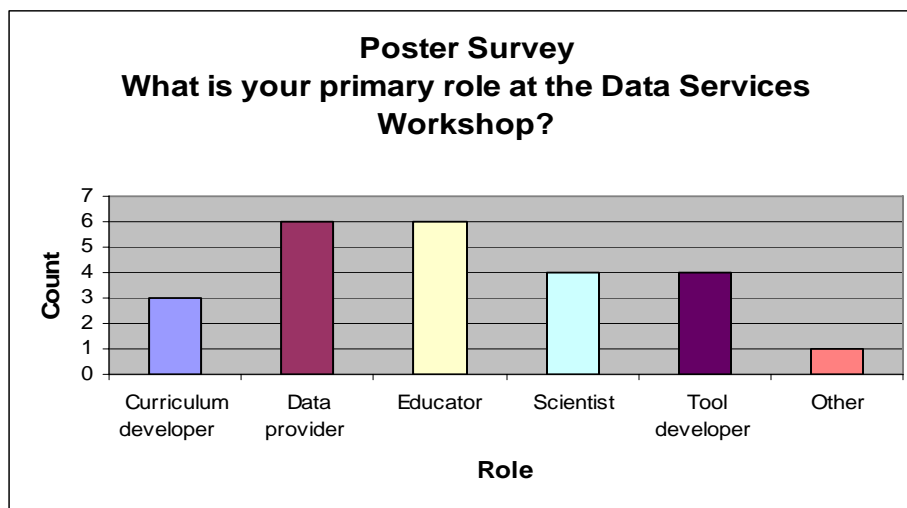Figure 5-1. Respondents to Questionnaires.

Questions 2 and 3 asked participants to describe their impressions of all the posters. The posters were listed and attendees were asked to check appropriate responses to each poster in four categories:

Knew about this before	The poster was useful
Learned about this here	Didn't visit this poster

Results are summarized in Figure 5-2.
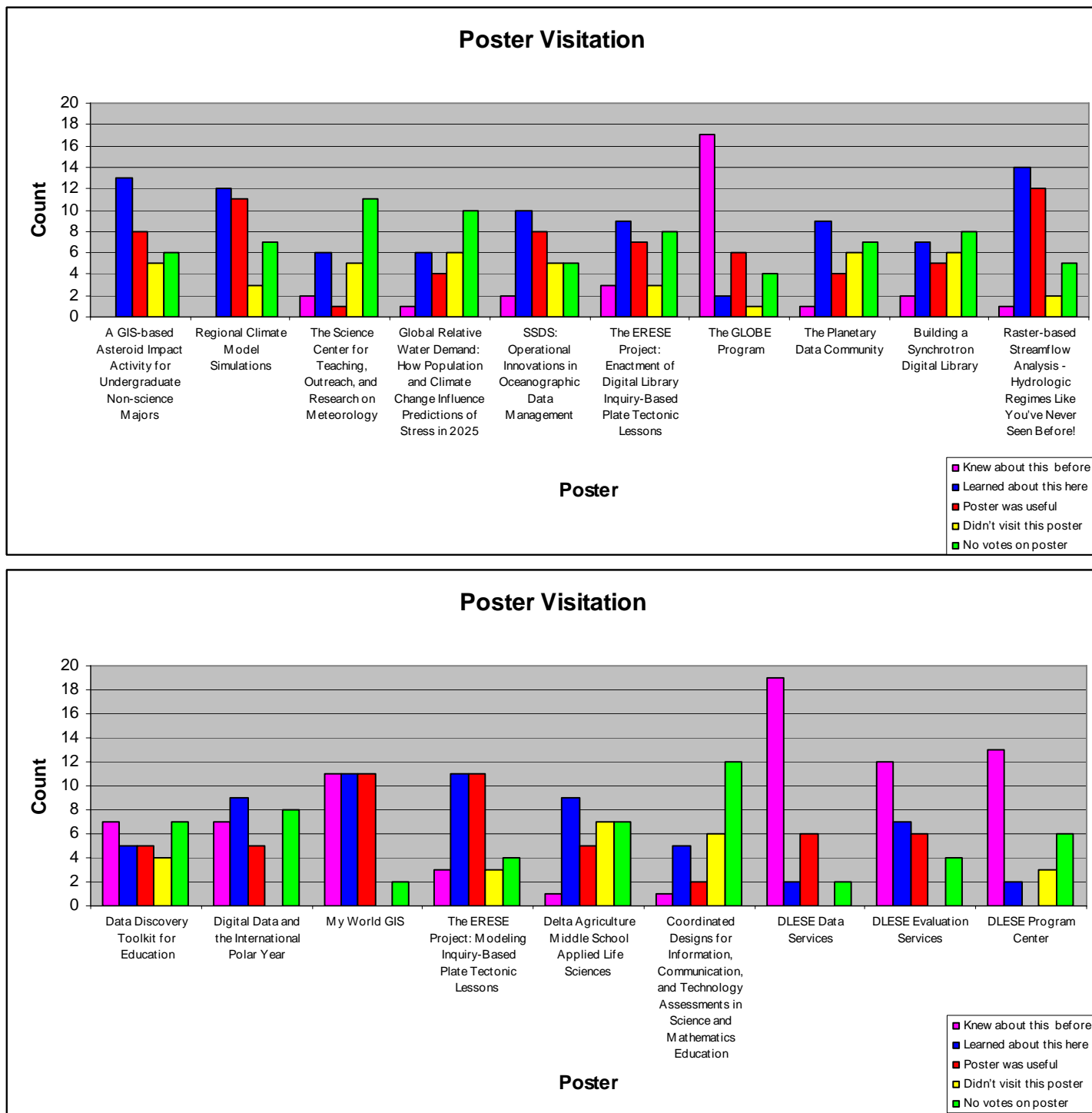
Figure 5-2. Poster visitation information.

GLOBE, My World GIS, and the DLESE posters were the most familiar to attendees. Those poster topics which attendees first learned of at the session most commonly were the Raster-based Streamflow Analysis, the GIS-based Asteroid Impact Activity, and the Regional Climate Model Simulations. Those posters most frequently listed as useful were the Raster-based Streamflow Analysis, the Regional Climate Model Simulations, My World GIS, and the ERESE Project.

Those that appeared to have the lowest visitation (see Figure 5-3) on the survey were the Coordinated Designs, the Science Center, and Global Relative Water Demand. One of these low visitation posters wasn't present at all (Science Center), and two (Coordinated Designs and Global Relative Water) did not arrive and the presenters made do with posting multiple 8-1/2 x 11 sheets describing the content).
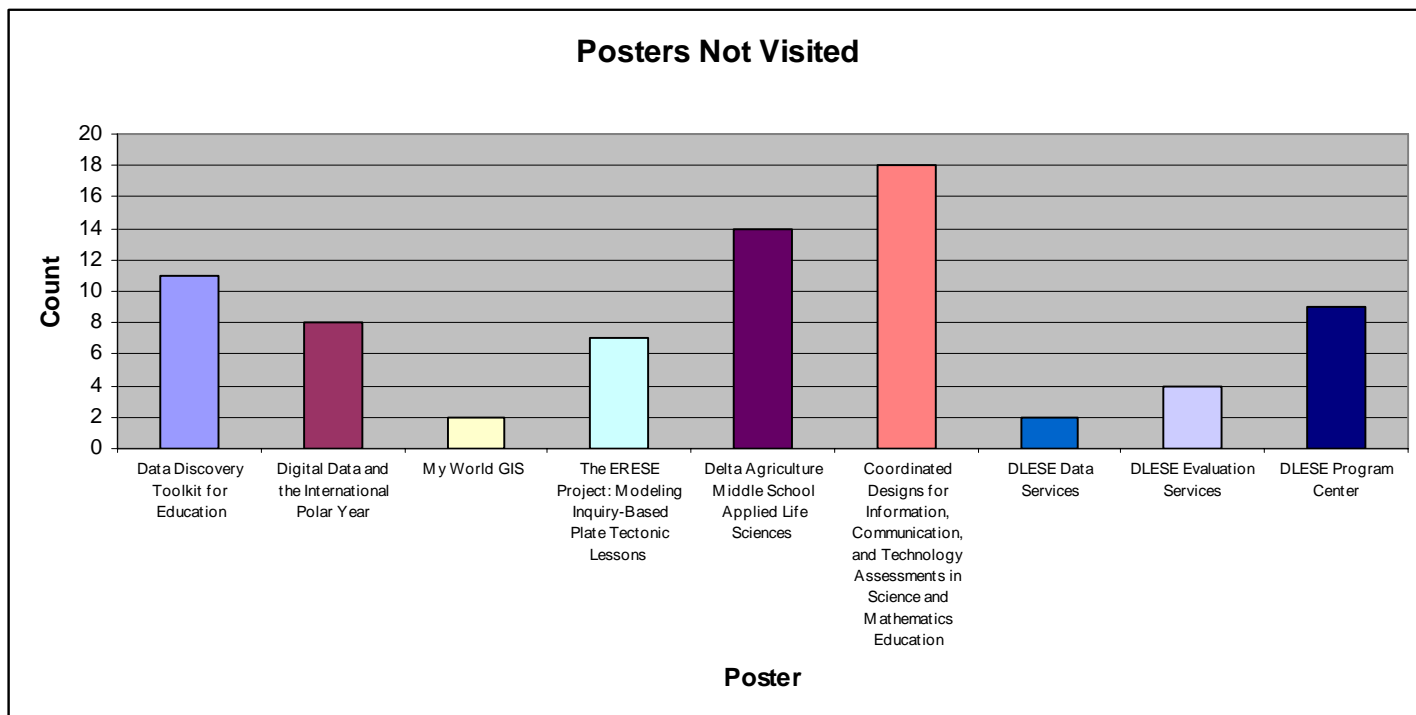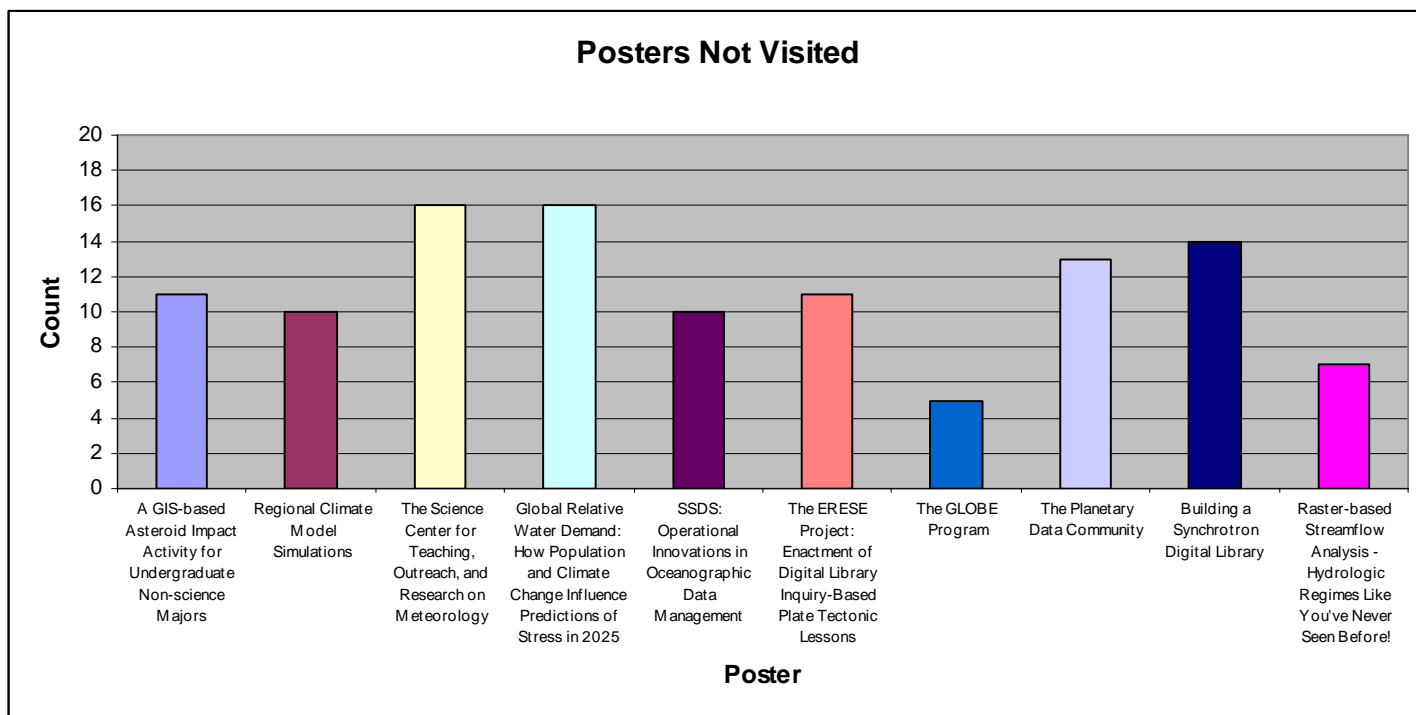
Figure 5-3. Posters not visited (either no boxes checked on a survey or else the "not visited" box was checked.

Placement of the posters may have had some part in visitation rates. The room was relatively small, with the posters were laid out along two adjoining walls with the main entrance at their corner. The poster displays were mounted perpendicular to these walls. The food and drinks were located along the other two walls, with tables available for seating area in the center of the room.

My World and GLOBE, two of the posters with the highest visitation rates, were located facing the main entry door. The space for posters ran out before all were mounted; the Planetary Data Community poster and one other un-registered poser were located on the wall behind the drinks table.

Four posters that were presented were not listed in the questionnaire. Several others had changed their titles enough to be confusing when one tried to correlate the questionnaire to the poster titles. Eight people rated the one poster that wasn't there; presumably, they were mistaken in which poster they were rating.

Final Question

Question 4 on the poster questionnaire was, "Of the projects you have become aware of here, which are most interesting or useful to you and why?" There were nine responses. The posters mentioned and associated comments were as follows:
   Three posters were mentioned twice--
   - Raster-based Streamflow ("make[s] another mode for 'seeing' data" and "This was a great idea and proof of concept of 'innovative' ways to display data")
   - MyWorld GIS ("very useful to see THREDDS application and tools")
   - Regional Climate Models ("Offers students the opportunity to do 'real science' and understand a major issue we face" and "regional climate simulations are an overlapping area of data interest; the NSIDC data are related to climate change issues")
   These posters were mentioned once each--
   - Building a Synchrotron Library ("Great idea--let's do it!")
   - IPY
   - DLESE Program Center ("metadata implications")

Appendix 1. Additional Data Information

In this appendix, some additional details on the questionnaire data are presented in graph form.

Professional Role Information

Participants could elect a secondary professional role, in addition to their primary designation. Each questionnaire offered this option. The results are given below.

Data Use Survey
What is your primary role at the Data Services Workshop?

Monday
What is Your Primary Role at the Data Services Workshop?

Tuesday
What is your primary role at the Data Services Workshop?

Wednesday
What is your primary role at the Data Services Workshop?

Final Survey
What is your primary role at the Data Services Workshop? (includes secondary roles)
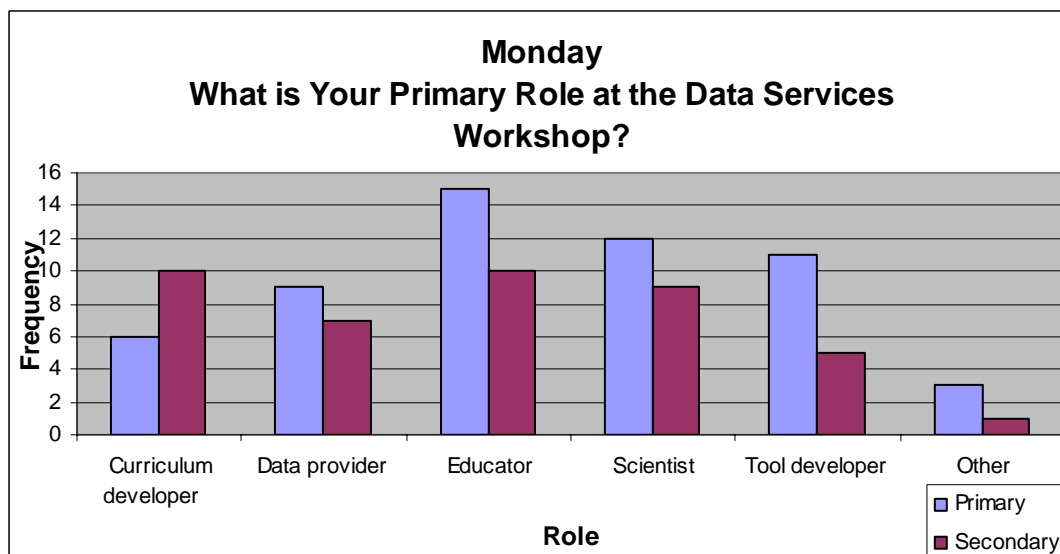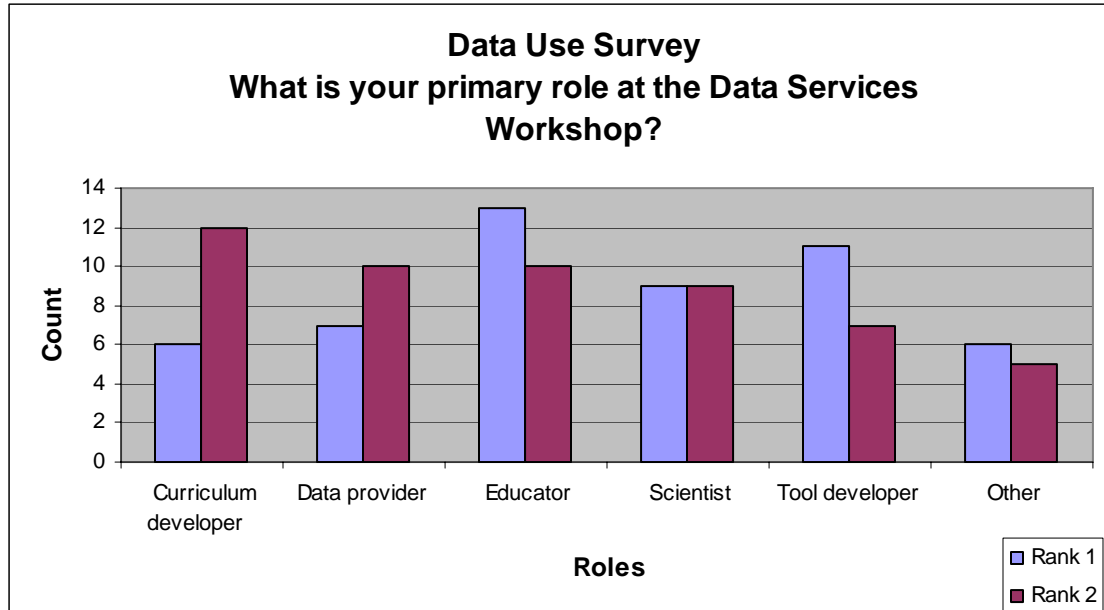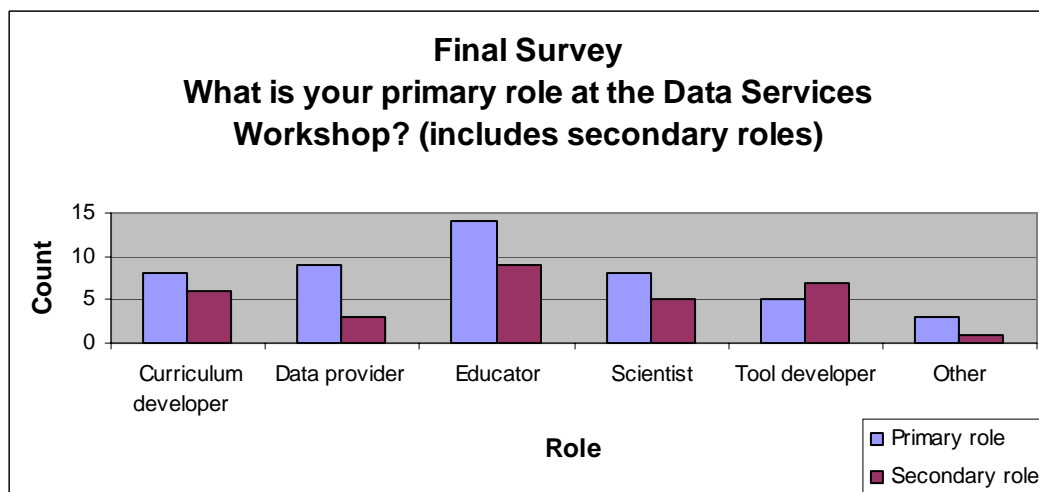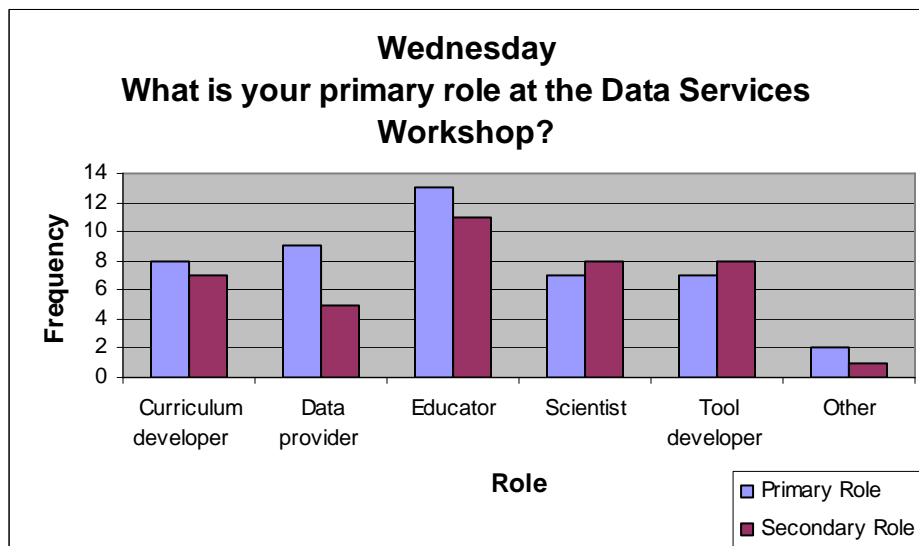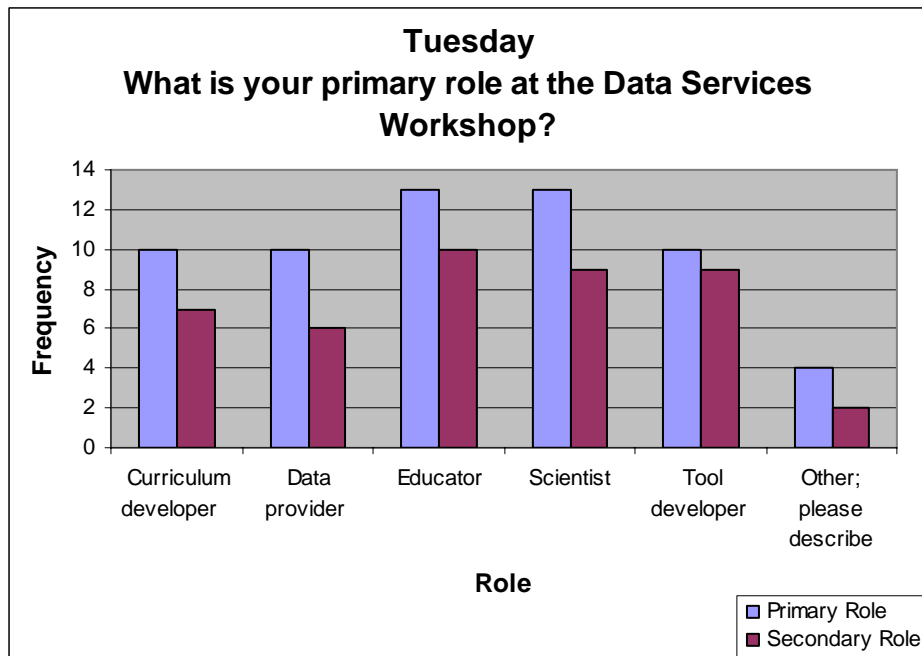
Poster Survey
What is your primary role at the Data Services Workshop?
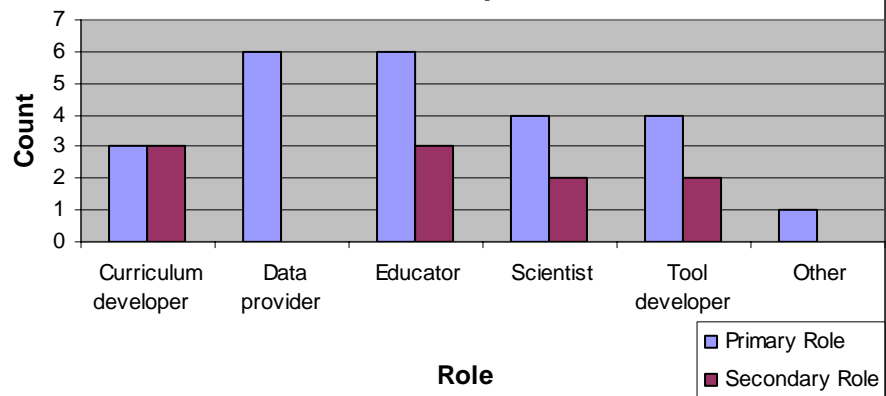
Data Use Questionnaire Data

Ranking barriers to data use

When asked about the barriers participants encountered to data use, they were offered the chance to rank the barriers in order of priority.
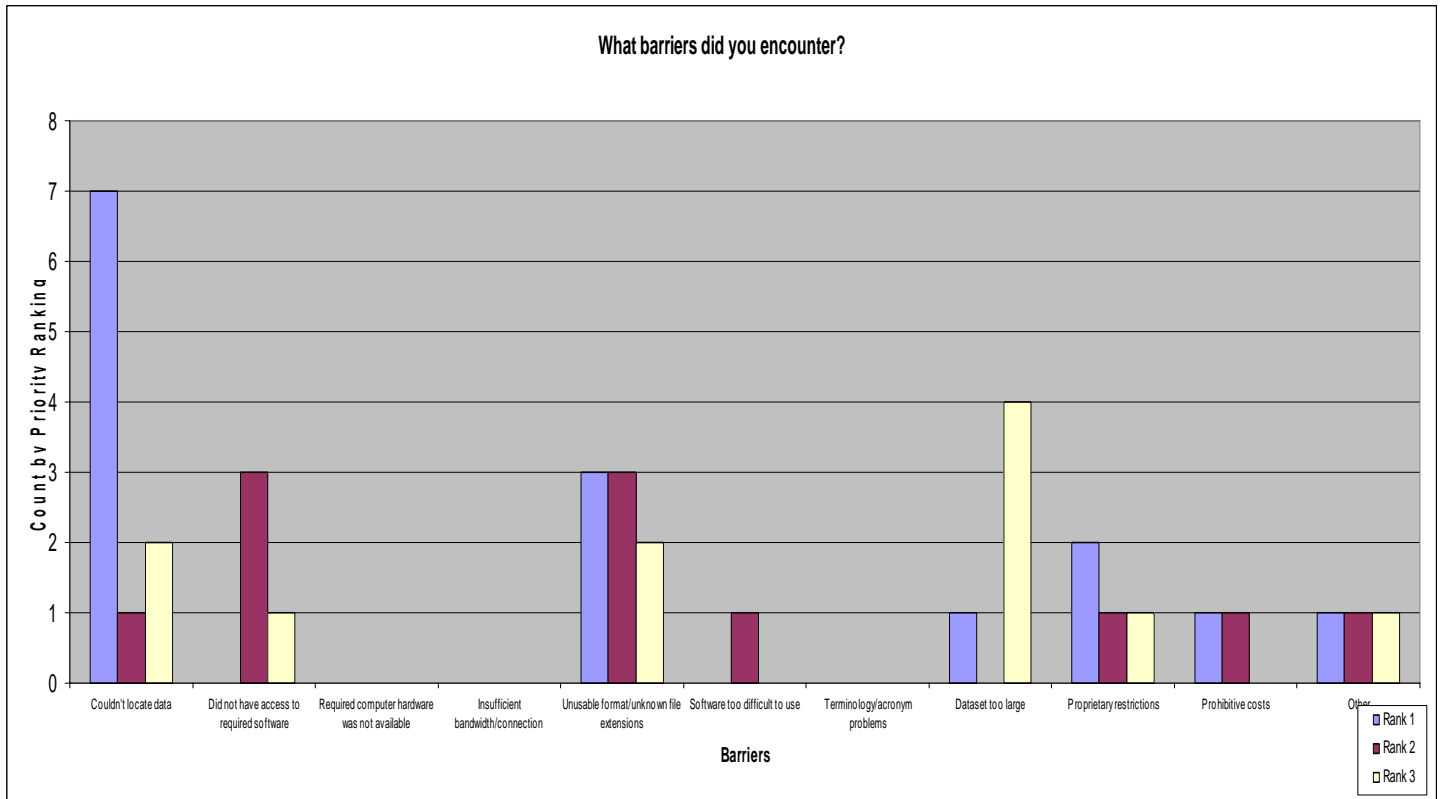
Audience priority rankings

The data use questionnaire asked respondents to rank the top three audiences for data use in priority order. The breakdown of the priority counts is shown below. Third priority was the only ranking with any sort of spread; there were several votes as third priority for the contexts of graduate classroom, informal education, governmental policymaking, and public interest. Media and homeschool audiences stand out as having only one vote in any ranking.
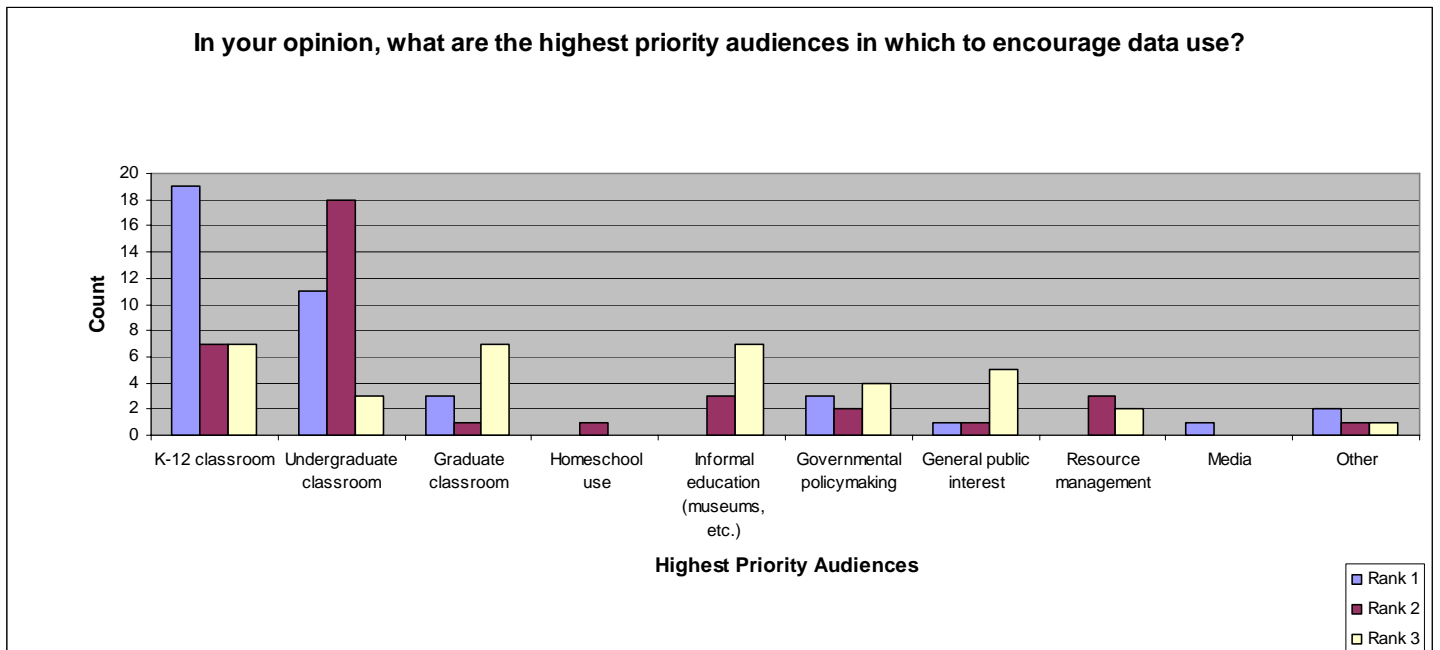
In your opinion, what are the highest priority audiences in which to encourage data use?

Count

Highest Priority Audiences	Rank 1	Rank 2	Rank 3
K-12 classroom	19	7	7
Undergraduate classroom	11	18	3
Graduate classroom	3	1	7
Homeschool use		1	
Informal education (museums, etc.)		3	7
Governmental policymaking	3	2	4
General public interest	1	1	5
Resource management		3	2
Media	1		
Other	2	1	1

Highest Priority Audiences

Rank 1
Rank 2
Rank 3

Daily and Final Questionnaire Data

Most valuable aspects

Ranking counts of 1, 2, or 3 are presented.

Monday
What aspect(s) of the workshop today did you find the most valuable? (Please rank 1, 2, 3.)

Tuesday
What aspect(s) of the workshop today did you find the most valuable?

Wednesday
What aspect(s) of the workshop today did you find the most valuable?

Final Survey
What aspect(s) of the workshop overall did you find the most valuable?
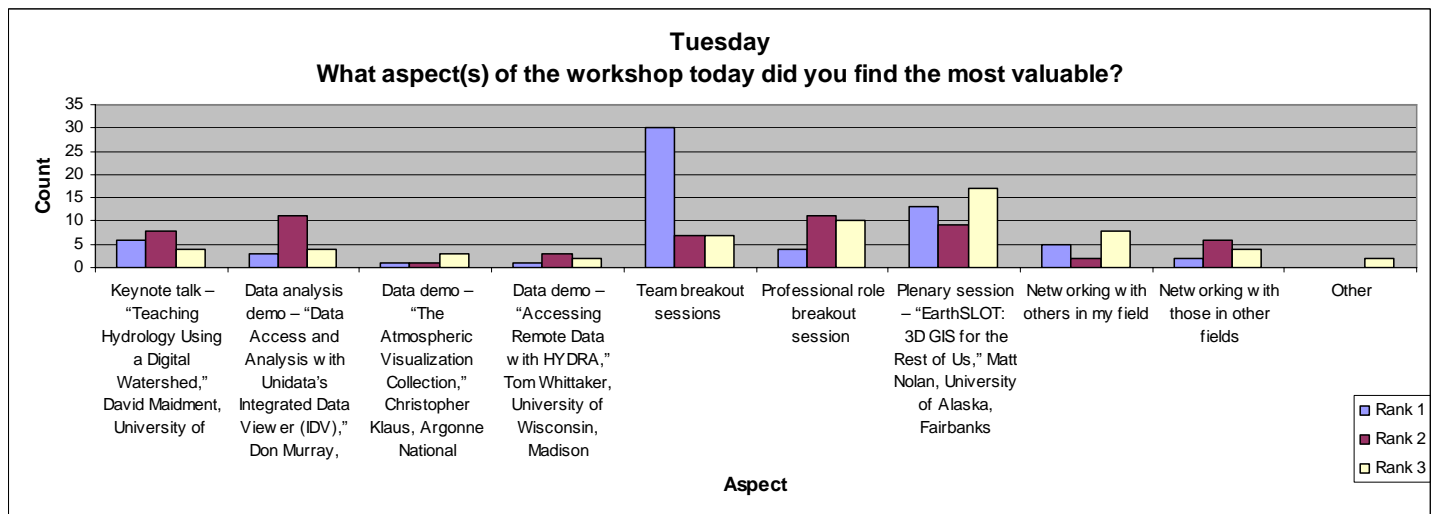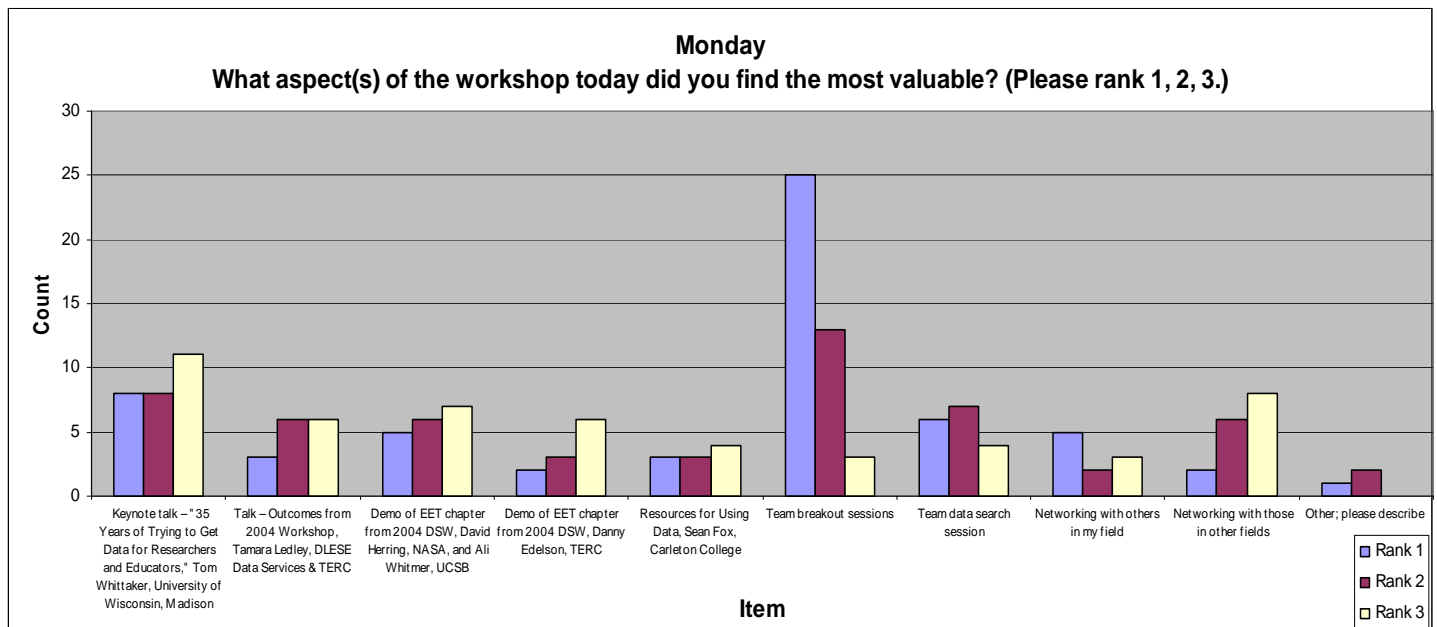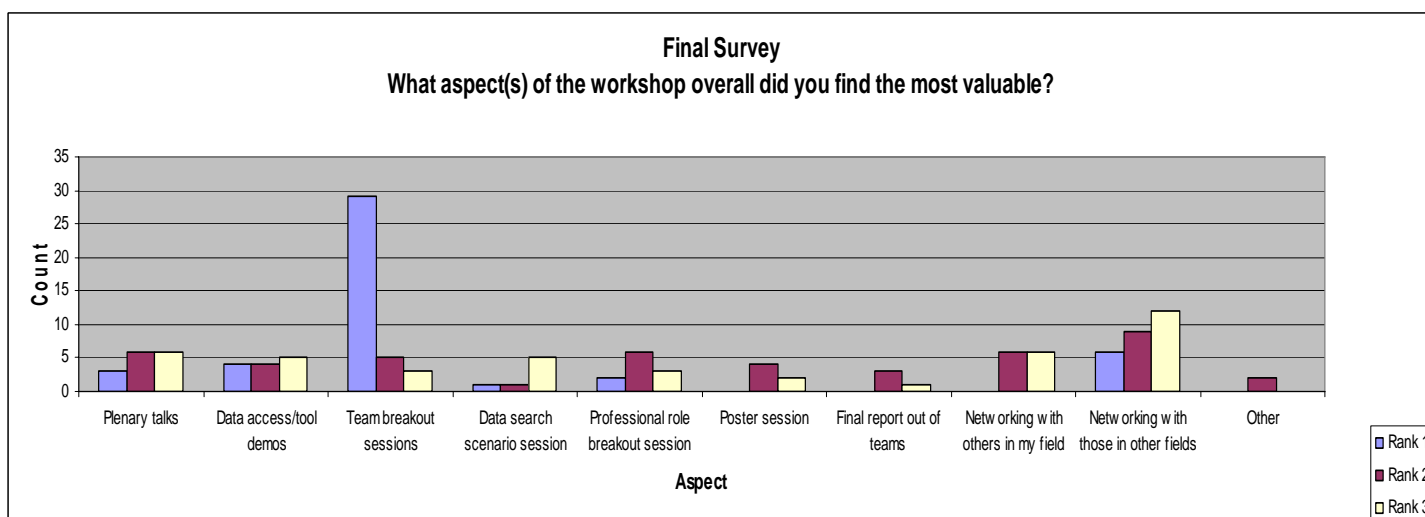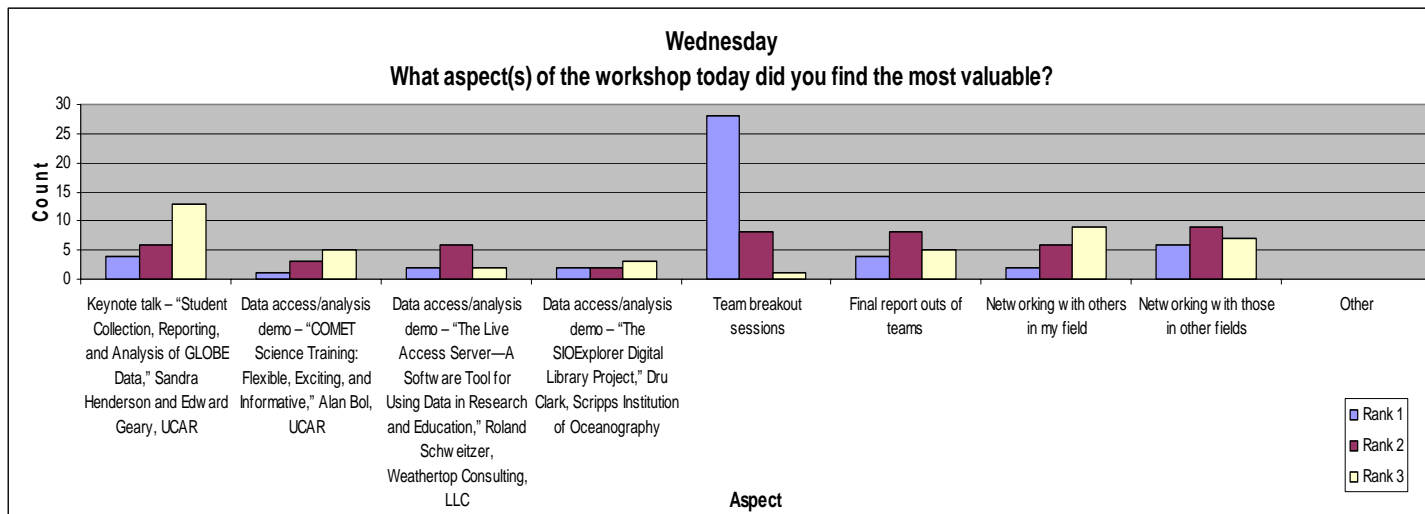
Balance of schedule

The daily and final questionnaires asked respondents to rank the top mix of each day along five categories (six for the final day). The breakdown of the rankings are shown below.

Monday
How would you rate the balance of the workshop today?

Tuesday
How would you rate the balance of the workshop today?

Wednesday
How would you rate the balance of the workshop today?

Final Survey
How would you rate the balance of the workshop overall?

Final Survey
What aspect(s) of the workshop overall did you find the most valuable?
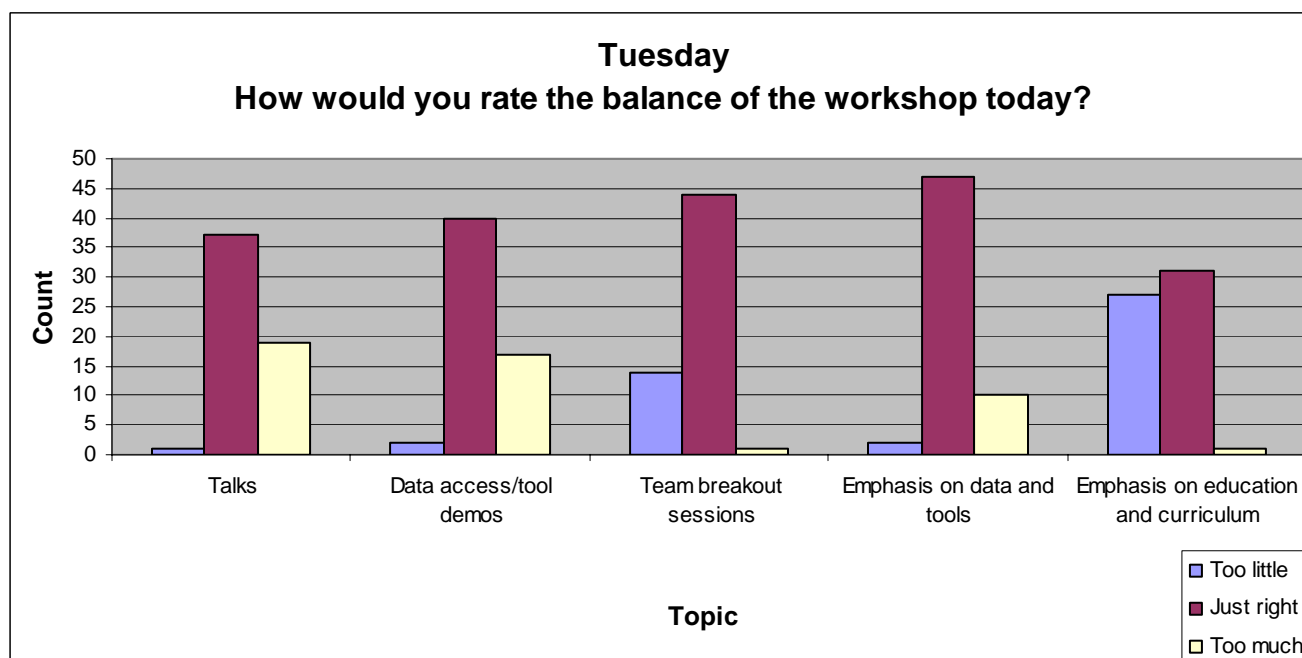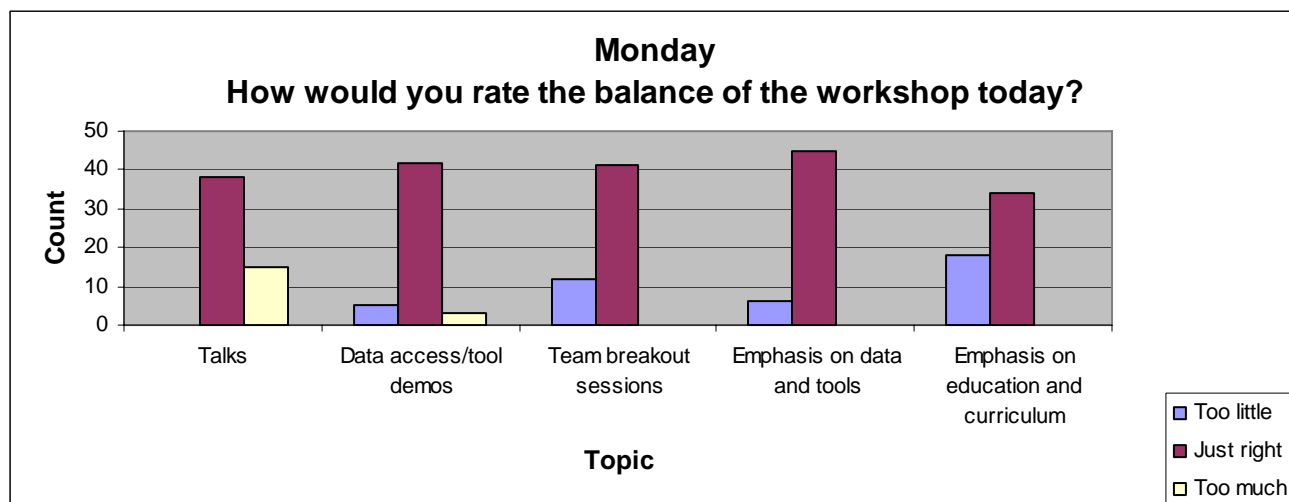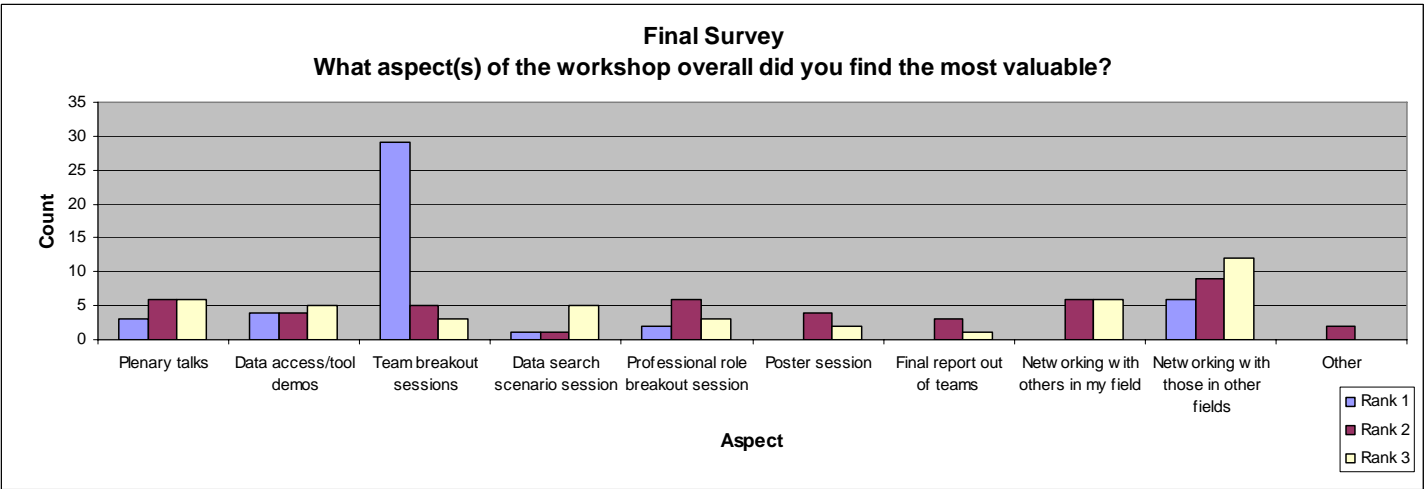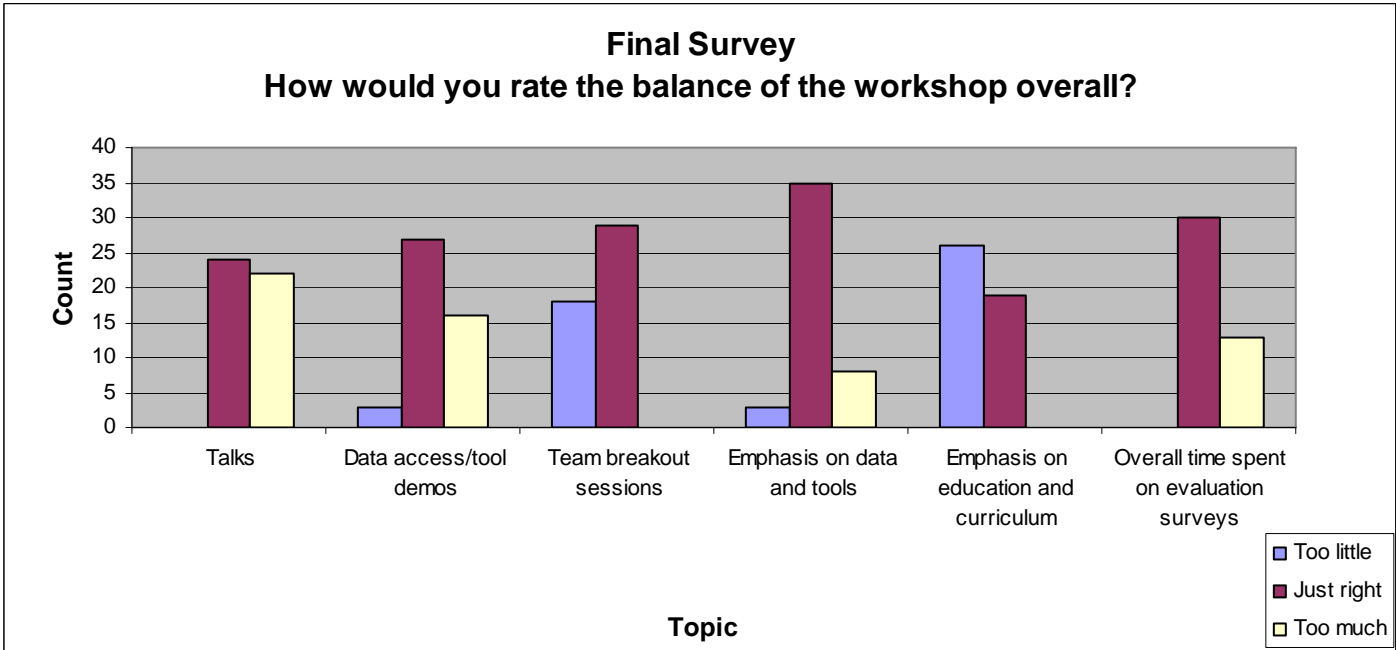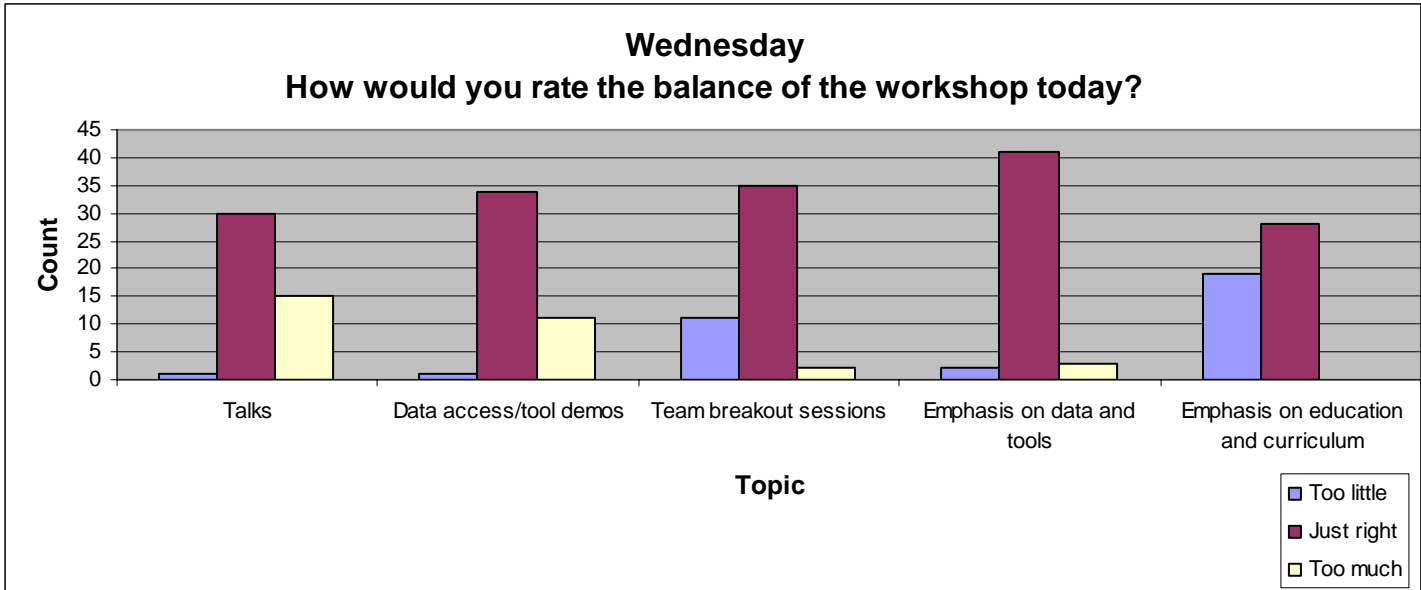
Appendix 2. Instruments

In this appendix, we include the six instruments used in the study.

DLESE Data Services Workshop 2005

Poster Session Feedback Questionnaire

One of the goals of the 2005 DLESE Data Services Workshop is to increase participant awareness of available data, the means by which data may be accessed and analyzed, and the ways in which data may be used in education. Please help us understand how well we are meeting our goal by completing this form. Thank You!

1. What is your primary role at the workshop? (Please mark your primary role with a "1" and check any others that apply.)

_____Curriculum developer
_____Data provider
_____Educator
_____Scientist
_____Tool developer
_____Other; please describe _____

2. Please check the appropriate box(es) for each project poster:

Poster Title	Knew about this before	Learned about this here	The poster was useful	Didn't visit this poster
A GIS-based Asteroid Impact Activity for Undergraduate Non-science Majors				
Regional Climate Model Simulations				
The Science Center for Teaching, Outreach, and Research on Meteorology				
Global Relative Water Demand: How Population and Climate Change Influence Predictions of Stress in 2025				
SSDS: Operational Innovations in Oceanographic Data Management				
The ERESE Project: Enactment of Digital Library Inquiry-Based Plate Tectonic Lessons				
The GLOBE Program				
The Planetary Data Community				
Building a Synchrotron Digital Library				
Raster-based Streamflow Analysis - Hydrologic Regimes Like You've Never Seen Before!				
Data Discovery Toolkit for Education				
Digital Data and the International Polar Year				
My World GIS				
The ERESE Project: Modeling Inquiry-Based Plate Tectonic Lessons				
Delta Agriculture Middle School Applied Life Sciences				
Coordinated Designs for Information, Communication, and Technology Assessments in Science and Mathematics Education				

3. Please check the appropriate box(es) for each DLESE core service poster.

DLESE Poster Topic	Knew about this before	Learned about this here	The poster was useful	Didn't visit this poster
DLESE Data Services				
DLESE Evaluation Services				
DLESE Program Center				

4. Of the projects you have become aware of here, which are most interesting or useful to you and why?

_____

_____

_____

_____

_____

Thank you for your feedback. Please return this form to a workshop staff person or to the drop-box at the registration table.

Final Day Questionnaire

Please answer the following questions for us so that we can determine what we did well and what we can improve. Any identifying information will be kept confidential.

WORKSHOP CONTENT

1. Which is your work team?

_____CUAHSI

_____Earthscope

_____EOS-Webster

_____FNMOC

_____IRIS

_____LEAD

_____MBARI

_____NASA

_____NSIDC

_____Palmer LTER

_____SIO Explorer

_____RCML

_____Not on a team

2. What is your primary role at the workshop? (Please mark your primary role with a "1" and check any others that apply.)

_____Curriculum developer
_____Data provider
_____Educator
_____Scientist
_____Tool developer
_____Other; please describe _____

3. What aspect(s) of the workshop overall did you find the most valuable? (Please rank 1, 2, and 3 in order of priority.)

_____Plenary talks
_____Data access/tool demos
_____Team breakout sessions
_____Data search scenario session
_____Professional role breakout session
_____Poster session
_____Final report out of teams
_____Networking with others in my field
_____Networking with those in other fields
_____Other; please describe _____

4. How would you rate the balance of the workshop overall?

	Too much	Just right	Too little
Talks			
Data access/tool demos			
Team breakout sessions			
Emphasis on data and tools			
Emphasis on education and curriculum			
Overall time spent on evaluation surveys			

5. What other aspects of the workshop overall would you have changed and how?

_____

_____

_____

6. On a scale from 1 to 5, how well did the poster session facilitate your learning about data access, tools, and educational uses of data? (Please check the appropriate box.)

Not well--1	2	Somewhat--3	4	Very well--5

Additional comments:

_____

_____

_____

7. On a scale from 1 to 5, did your work team work well together? (Please check the appropriate box.)

Not well--1	2	Somewhat--3	4	Very well--5

Please comment on what did and didn't work in your team:

_____

_____

_____

8. What do you plan to do in your work as a result of this workshop that will facilitate the use of data?

_____

_____

_____

9. On a scale from 1 to 5, how valuable were the workshop program and other printed materials you received? (Please check the appropriate box.)

Below average--1	2	Average--3	4	Excellent--5

Additional comments:

_____

_____

_____

_____

WORKSHOP LOGISTICS

10. How would you rate the online registration for the workshop? (Please check the appropriate box.)

Difficult	Somewhat easy	Easy to Use

Additional comments:

_____

_____

_____

_____

11. How useful were the sections of the meeting website? (Please check the appropriate box.)

	Not useful	Somewhat useful	Very useful
Information section			
Swiki			

Additional comments:

_____

_____

_____

_____

12. How would you rate the meeting facilities (e.g., meeting rooms, equipment)? (Please check the appropriate box.)

Below average--1	2	Average--3	4	Excellent--5

Additional comments:

_____

_____

13. How would you rate the housing and food? (Please check the appropriate box.)

Below average--1	2	Average--3	4	Excellent--5

Additional comments:

_____

_____

GENERAL IMPRESSIONS OF WORKSHOP

14. Please use the space below to add any other comments you have, suggestions for improvements at future workshops, or any other ideas you would like to share with us.

_____

_____

_____

_____

15. If we may contact you further about your experience, please provide your contact information here:

_____

_____

Please complete and turn in this form to a workshop staff person or to the drop-box at the registration table during your final day. Your feedback and comments will help to shape future DLESE data workshops. Thank you!
--DLESE Data Services Team

DLESE Data Services Workshop 2005

Data Use Questionnaire

In order to improve our understanding of the ways in which data are being used and the ways in which data use may be made easier, please answer the following questions. Thank you for your help.

1. What is your primary role at the Data Services workshop? (Please mark your primary role with a "1" and check any others that apply.)

     _____Curriculum developer
     _____Data provider
     _____Educator
     _____Scientist
     _____Tool developer
     _____Other; please describe _____

_____

_____

2. For which learning goals have you successfully used data *within educational contexts*? (Check all that apply.)

    ____Understanding weather
    ____Understanding the ocean
    ____Understanding geology/seismology
    ____Interpreting satellite imagery
    ____Understanding the scientific method
    ____Pattern recognition
    ____Meeting science standards
    ____Personal exploration and learning
     ____Other; please describe _____

_____

_____

3. Which of the following data have you used successfully? (Check all that apply.)

    ____Census
    ____Earthquake/volcano
    ____Satellite imagery (e.g., GOES, Landsat, MODIS, SeaWiFs)
    ____Sea surface temperature
    ____Topography data
    ____Tree ring data
    ____Climate/weather model simulation output
    ____Weather/climate observations (e.g., temperature, precipitation)
    ____GOES (Geostationary Operational Environmental Satellite) images
    ____MODIS (Moderate Resolution Imaging Spectroradiometer)
    ____TOMS (Total Ozone Mapping Spectrometer)
     ____Other; please list _____

_____

_____

4. Which of the following data formats have you used successfully? (Check all that apply.)

    ____GIS (Geographic Information System)
    ____Image data (e.g., JPEG, GIF, TIFF)
    ____Text/ASCII (e.g., tab-delimited text for spreadsheet use)
    ____NetCDF (Network Common Data Format)
    ____HDF-EOS (Hierarchical Data Format-Earth Observing System)
    _____Other; please list _____

_____

_____

5. Which of the following data sources have you used more than once? (Check all that apply.)

    ____DOD (Department of Defense)
    ____EPA (Environmental Protection Agency)
    ____GLOBE (GLobal Observations to Better the Environment)
    ____NASA (National Aeronautics and Space Administration)
    ____NCAR (National Corporation for Atmospheric Research)
    ____NOAA (National Oceanic and Atmospheric Administration)
    ____NOAO (National Optical Astronomy Observatories)
    ____NWS (National Weather Service)
    ____USGS (United State Geological Survey)
    _____Other; please list _____

_____

_____

6. Have you found it necessary to modify data sets before they were used by an end-user/learner (e.g., selected subset, imported into Excel)?

    ____ Yes   _____No

If yes, please describe the original state of the data (e.g., format, file size, region, etc.):

_____

_____

_____

How did you modify the data (e.g., imported into Excel, selected time period, changed units, etc.)?

_____

_____

_____

7. What data analysis/visualization tools do you commonly use?

_____Excel or other spreadsheet program
_____MATLAB or other numerical analysis package
_____GIS (Geographical Information System) program
_____IDV (Integrated Data Viewer) or other geoscience analysis package
_____ICE (Image Composite Explorer) or other satellite image exploration package
_____GeoMapApp or other integrated mapping application
_____ImageJ or other image processing software
_____Other; please list or describe _____

_____

_____

8. What data analysis procedures have your end-users/learners performed on the data?   (Check all that apply.)

_____Statistics
_____Basic math
_____Graphs
_____Visualization/Imaging
_____Queries
_____Classification
_____Plotting/Mapping
_____Quality control
_____Other; please describe _____

_____

_____

9. Have you made any attempts to obtain and use data sets that were NOT successful?

_____ Yes   _____No

If yes, what barriers did you encounter? (Please rank 1, 2, and 3 in order of priority.)

_____Couldn't locate data
_____Did not have access to required software
_____Required computer hardware was not available
_____Insufficient bandwidth/connection
_____Unusable format/unknown file extensions
_____Software too difficult to use
_____Terminology/acronym problems
_____Dataset too large
_____Proprietary restrictions
_____Prohibitive costs
_____Other; please describe _____

_____

_____

10. What types of instruction or support are most helpful to you when using specific data sets? (Check all that apply.)

  ____One-on-one email assistance
  ____Phone support
  ____FAQ
  ____Glossary of terms
  ____Examples
  ____Step-by-step instructions
  ____Training workshops
  ____Online tutorial
  ____Live demos
  ____Reference manual/documentation
  ____Other; please describe _____

_____

_____

11. In your opinion, what are the highest priority audiences in which to encourage data use? (Please rank 1, 2, and 3 in order of priority.)

  ____K-12 classroom
  ____Undergraduate classroom
  ____Graduate classroom
  ____Homeschool use
  ____Informal education (museums, etc.)
  ____Governmental policymaking
  ____General public interest
  ____Resource management
  ____Media
  ____Other; please describe _____

_____

_____

Thank you for your feedback. Please return this form to a workshop staff person or to the drop-box at the registration table.

DLESE Data Services Workshop 2005

Monday Feedback Questionnaire

1. What is your primary role at the workshop? (Please mark your primary role with a "1" and check any others that apply.)

_____Curriculum developer
_____Data provider
_____Educator
_____Scientist
_____Tool developer
_____Other; please describe _____

2. What aspect(s) of the workshop today did you find the most valuable? (Please rank 1, 2, and 3 in order of priority.)

 _____Keynote talk – "35 Years of Trying to Get Data for Researchers and Educators," Tom   Whittaker, University of Wisconsin, Madison
_____Talk – Outcomes from 2004 Workshop, Tamara Ledley, DLESE Data Services & TERC
_____Demo of EET chapter from 2004 DSW, David Herring, NASA, and Ali Whitmer, UCSB
_____Demo of EET chapter from 2004 DSW, Danny Edelson, TERC
_____Resources for Using Data, Sean Fox, Carleton College
_____Team breakout sessions
_____Team data search session
_____Networking with others in my field
_____Networking with those in other fields
_____Other; please describe _____

3. How would you rate the balance of the workshop today?

	Too much	**Just right**	**Too little**
Talks			
Data access/tool demos			
Team breakout sessions			
Emphasis on data and tools			
Emphasis on education and curriculum			

4. What aspects of today's session would you have changed and how?

_____

_____

Thank you for your feedback. Please return this form to a workshop staff person or to the drop-box at the registration table.

DLESE Data Services Workshop 2005

Tuesday Feedback Questionnaire

1. What is your primary role at the workshop? (Please mark your primary role with a "1" and check any others that apply.)

_____Curriculum developer
_____Data provider
_____Educator

_____Scientist
_____Tool developer
_____Other; please describe _____

2. What aspect(s) of the workshop today did you find the most valuable? (Please rank 1, 2, and 3 in order of priority.)

_____Keynote talk – "Teaching Hydrology Using a Digital Watershed," David Maidment, University of
      Texas, Austin
_____Data analysis demo – "Data Access and Analysis with Unidata's Integrated Data Viewer (IDV),"   Don
Murray, Unidata
_____Data demo – "The Atmospheric Visualization Collection," Christopher Klaus, Argonne National
      Laboratory
_____Data demo – "Accessing Remote Data with HYDRA," Tom Whittaker, University of Wisconsin,
      Madison
_____Team breakout sessions
_____Professional role breakout session
_____Plenary session – "EarthSLOT: 3D GIS for the Rest of Us," Matt Nolan, University of Alaska,
      Fairbanks
_____Networking with others in my field
_____Networking with those in other fields
_____Other; please describe _____

3. How would you rate the balance of the workshop today?

	Too much	Just right	Too little
Talks			
Data access/tool demos			
Team breakout sessions			
Emphasis on data and tools			
Emphasis on education and curriculum			

4. What aspects of today's session would you have changed and how?

_____

_____

Thank you for your feedback. Please return this form to a workshop staff person or to the drop-box at the registration table.

DLESE Data Services Workshop 2005

Wednesday Feedback Questionnaire

1. What is your primary role at the workshop? (Please mark your primary role with a "1" and check any others that apply.)

_____Curriculum developer
_____Data provider
_____Educator
_____Scientist
_____Tool developer
_____Other; please describe _____

2. What aspect(s) of the workshop today did you find the most valuable? (Rank 1, 2, and 3 for the top three most valuable aspects.)

_____Keynote talk – "Student Collection, Reporting, and Analysis of GLOBE
        Data," Sandra Henderson and Edward Geary, UCAR
_____Data access/analysis demo – "COMET Science Training: Flexible, Exciting, and
        Informative," Alan Bol, UCAR
_____Data access/analysis demo – "The Live Access Server—A Software Tool for Using Data   in
Research and Education," Roland Schweitzer, Weathertop Consulting, LLC
_____Data access/analysis demo – "The SIOExplorer Digital Library Project," Dru Clark,   Scripps
Institution of Oceanography
_____Team breakout sessions
_____Final report outs of teams
_____Networking with others in my field
_____Networking with those in other fields
_____Other; please describe _____

3. How would you rate the balance of the workshop today?

	Too much	Just right	Too little
Talks			
Data access/tool demos			
Team breakout sessions			
Emphasis on data and tools			
Emphasis on education and curriculum			

4. What aspects of today's session would you have changed and how?

_____

_____

Thank you for your feedback. Please return this form to a workshop staff person or to the drop-box at the registration table.