The 2002 NASA GSTW Electronic Linkage Campaign Evaluation Report

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GSTW and NASA

e-Education supports the president's call for citizen-centric projects to research and provide web-based educational experiences that let users take advantage of NASA offerings. The NASA-Global Science and Technology Week (GSTW) electronic linkage campaign met that objective. It also let NASA test an event-driven campaign that covers experimentation, customers, delivery, content, architecture, funding model, and promotion/marketing.

GSTW is an annual event sponsored by the president's Office of Science and Technology Policy. The 2002 theme was "Science and Technology: Serving Our Global Community." The event took place April 28–May 4. Its primary audience is K-12 students, but the week also targets parents, teachers, university students, professional societies, museums, and technology groups.

NASA's 2002 goal was to create an interactive electronic linkage campaign that would allow citizens to experience and discover ways that NASA technology touches their lives. A virtual team planned, developed, and implemented a web site to meet this goal. More than 70 partners were part of the campaign.

The team identified three customer tracks for the interactive web site: youth, educator/parent, and interested citizen. Middle school age was targeted for the youth group.

The general theme was spinoffs. Five NASA technology areas were explored: communication, food-nutrition, health-medicine, remote sensing, and transportation. Some activities already existed—Road Rally, Space Technology Hall of Fame, Spinoffs Memory Game. Others were created—Topic Hotlist, WebQuest, Wheel of Spinoffs Treasure Hunt, NASA Spinoff Trivia Challenge, The Latest and Greatest, Spinoffs That Rock!, The Write Stuff.

The evaluation of this linkage campaign was experiential in nature, focusing on how people used the site and what their perception of it was.

NASA-GSTW Web Site Usage

To characterize how participants used the web site, NASA staff logged web usage from April 20, 2002, to May 31, 2002. A program called WebTrends® processed the raw usage logs into various reports on site hits, visitor patterns, referring sites, etc. For this report the following definitions apply: A raw web hit includes any image or page accessed from the server. From the users' perspective, a web page may result in multiple hits as each graphic on the page is considered a separate hit. A page view is defined as the number of times a particular page is viewed. A user session is a unique IP address that connects to the server (this number is counted only once per recording session). Lastly, bandwidth is the volume of activity calculated in Kbytes transferred for a given recording session.

The WebTrends data indicates heavy usage of the GSTW site, particularly given the short time frame of the event. The majority of this usage occurred during the GSTW dates. During the data collection period GSTW recorded 25 percent of all hits to the total NASA Education site.

Number of raw hits—368,010
Number of page views—34,762
Number of user sessions—48,214
Total bandwidth—2,852,315K
GSTW (4/28-5/02) bandwidth—1,029,919K

Table 1 provides the number of sessions where a user requested the main page for each of the target audiences. This number was used as a proxy for the popularity of each section of the web site. Overall, the distribution of user sessions seems fairly even.

Table 1: Usage of Each Area

Page	User Sessions	
	Number	Percentage
Youth activities	1,148	34
Educator/Parent activities	1,228	37
Interested citizen activities	986	29

Table 2 provides the percentage of requests (n=69,810) for a given activity. Because we cannot track the views of an activity that takes the user off the GSTW server, the activities listed below include only those that were located on the GSTW server. The poster was the most viewed section of the web site, and the Topic Hotlist was the most viewed activity. There was not a pattern of requests for the activities as ordered on the web site; that is, the Spinoff Trivia Challenge was the third activity in order, yet was the second most requested activity. The average user session length was 6 minutes 55 seconds. As a result, we need to ensure the first activity on the page is the most engaging, that way people will want to see more. Other usage statistics are in Appendix C.

Table 2: Request Percentage of Each Activity

Activity	% Requests	Activity Web Site Order
Poster	78.9	
Wallpaper	5.6	
Topic Hotlist	2.9	1
Spinoff Trivia Challenge	2.4	3
Poster Activities	2.2	
Spinoffs That Rock	2.2	6
Wheel of Spinoffs Treasure Hunt	2.0	2
Spinoff Memory Game	1.9	5
Spinning off – Activities and Lesson Plans	0.5	
Rate This Site	0.4	
The Write Stuff	0.4	7
Latest and Greatest	0.4	4
Web Quest Purpose	0.1	

It's evident from reviewing the web sites that referred a user to the GSTW site that NASA is leveraging its internal marketing strengths. A total of 86 percent of users came to the GSTW site from other NASA sources, while 13 percent either typed in the address or used a hyperlink from an e-mail. Boeing, with 184, was the only non-NASA site referring users to GSTW. It's worth noting that none of the referrals came from the official GSTW web site.

Feedback Results
We used two feedback mechanisms to gain information from users about the GSTW web site. The Rate This Site (Appendix A) feedback form was located on the main GSTW web page, while target group-specific EDCATS feedback forms were located at the bottom of each target area. The main Rate This Site form received 43 replies, while there were no EDCATS forms generated during GSTW.

With 48,214 users, 43 respondents represent a 0.1% response rate. Reviewing the responses indicates that mostly the extreme ends of the spectrum took the time to complete the forms.

Gender
Female = 20
Male = 23

Statement	Average
The site was easy to navigate.	4.16
The site was user centered.	4.09
The information on this site was interesting to me.	4.11
5 = Strongly Agree, 4 = Agree, 3 = Neutral, 2 = Disagree, 1 = Strongly Disagree	

NASA strives to receive an average rating of 4.3 for each of its face-to-face programs. This was one of the first electronic linkage campaigns of this sort; therefore, it is not yet clear what benchmark applies for this type of campaign. It's also unclear how representative of the population this is because users were not forced to give feedback. It appears as if only those with very strong positive or negative feedback responded. Future electronic linkage campaign evaluations might want to conduct case studies of a representative sample of users.

Comments (Appendix B) received were mostly positive, with a few exceptions dealing with load time and readability. Here are some examples of comments that speak directly to the goal of informing users of how NASA touches their everyday lives:

> "You created a simply superb site, and really useful information can be easily gotten by anyone. Thanks for creating such a site. NASA always helps students like us to explore space and get interested in subjects like science and technology. Thank you very much, NASA, for making our interest in it."

> "I checked out this site for just a few minutes, and I'm amazed at what I learned. I had no idea NASA was involved in so many areas that touch our everyday lives."

Limitations/Recommendations
We need to address some limitations to the data collection and reporting in future electronic linkage campaigns:

- Because of COPPA regulations, collection of personal data from children under 13, without parental permission, limits the ability to disaggregate the data and therefore determine the actual number of students touched by the site. It would be too complex to try and get parental permission from all children under the age of 13. In this case it might be necessary to recruit case study groups that will serve not only as a representative sample, but also as a group from whom we could get parental permissions. To accomplish this, we might have each center recruit a local school to participate, or we might have to set up a location where participants can come to use the site. Having case study

groups can also increase the amount of relevant information collected. Members of the case study can be interviewed during use and possibly complete a more in-depth feedback form.

- The limitations of WebTrends prevent us from accurately counting the number of people who came to the web site. It might help to have someone investigate the use of "client-side" tracking software that will allow for a more thorough analysis of the users.
- It seems only one feedback form on the main page is needed. The response rate was too low to warrant any fine-grained feedback forms in different sections or activities. One form might help to create a registered community to get more informative results. Another idea is to give those who provide feedback a benefit, that is a special poster they could download after filling out the form.
- No learning outcome evaluation measures were used this time. Again, we can use case study groups to gain more information about specific learning outcomes related to the target theme.
- Because survey responses were in the form of e-mail, it was very difficult to compile this data. Future electronic linkage campaigns might try an online survey program. Such a program allows great flexibility in the creation of questions and ease of distribution. But most importantly, such a program collects all responses in a readily accessible database to facilitate analysis.

Conclusion

The evaluation of web site usage shows that there was a heavy amount of traffic given the short time frame. There was not a predominate pattern shown between percentage of activity requests and their order on the web site. Also, the data shows that NASA is leveraging its internal marketing strengths because 86 percent of the referral sites came from another NASA source. While there was a low response rate to the feedback form, those who did respond tended to report a positive experience.

Appendix A

Rate This Site

The site was easy to navigate.
__Strongly Agree __Agree __Neutral __Disagree __Strongly Disagree

The site was user centered**.**
__Strongly Agree __Agree __Neutral __Disagree __Strongly Disagree

The information on this site was interesting to me.
__Strongly Agree __Agree __Neutral __Disagree __Strongly Disagree

Please leave us any other comments.

Your gender:
__Male __Female

Your e-mail address? If you would like for someone to contact you, please leave your e-mail address (must be 13 years of age or older).

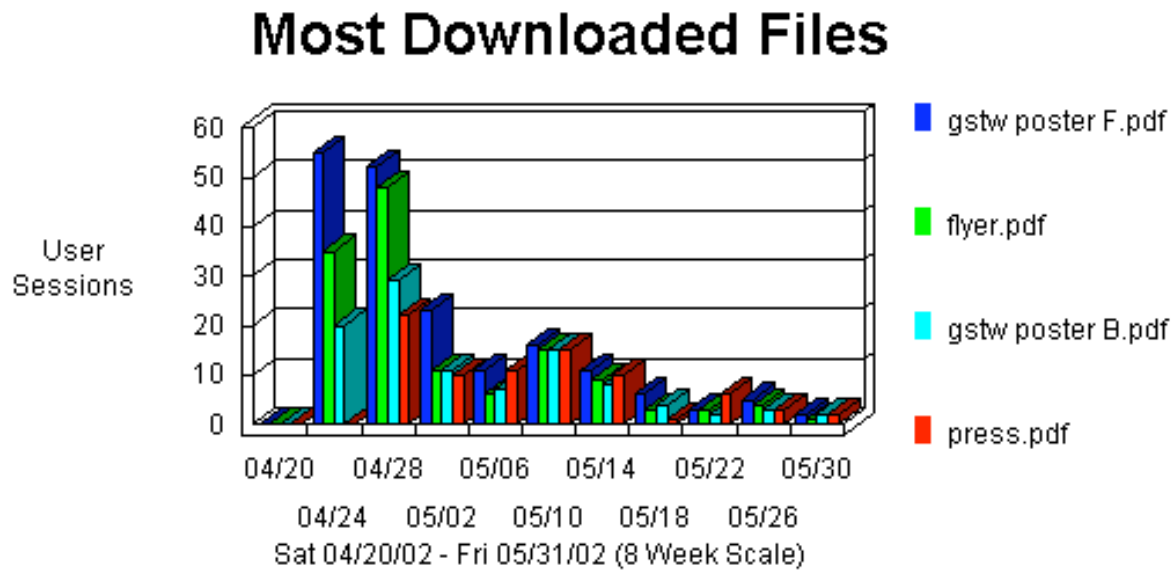
Appendix B

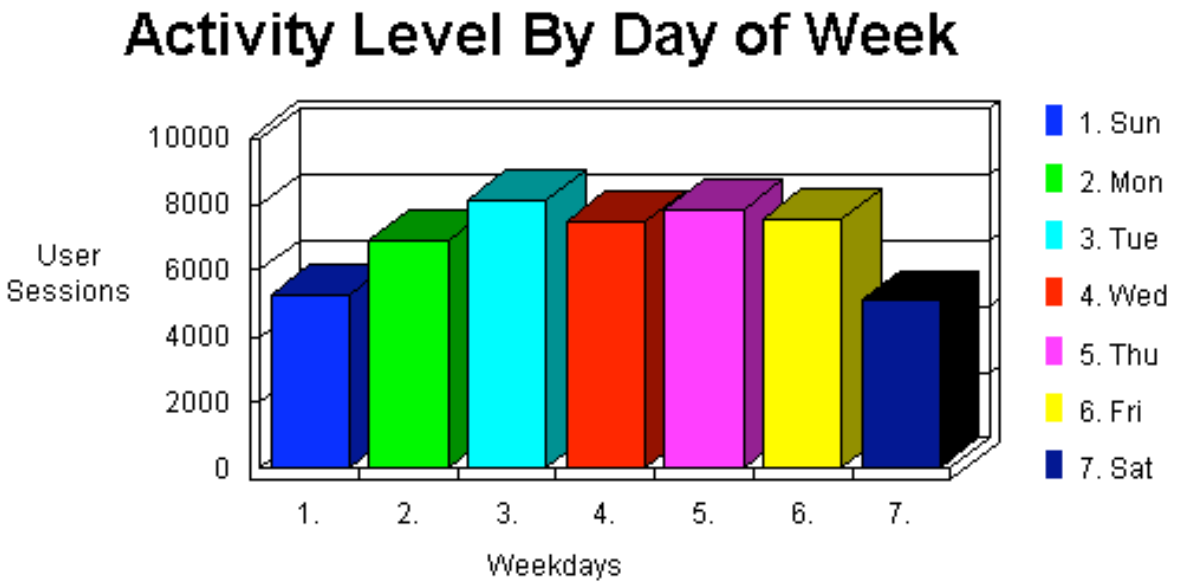
Comments—Rate This Site

- Can't wait to try some of the activities with my own students and teachers.
- Excellent site. Keep up the good work!
- Fantastic! I will be a frequent visitor, and I have already forwarded the site to many others!
- For some reason the site was slow in opening, but it may have possibly been my server at work. Great job!
- Great job! The Latest and Greatest seems too technical for kids (too much text) http://education.nasa.gov/gstw2002/latest_greatest.html
  Only took me 29 picks to solve the puzzle in the Space Place, what do I win?
- Great web page, and easy to use!
- Homepage feature has some boring aspects.
- I am very much impressed by the steps take by NASA. It is really amazing!!!
- I appreciated reviewing the site. Not having a child in the school system, I'm simply not familiar with the NASA program. Hence, how widespread is this information to schools around the country? Are only those in partnership with NASA aware of this exciting information? Have you made this information available to the religious community, community centers in various counties, etc.? You mentioned this info was also made for those who don't yet read (kindergarten). Which of the links are geared to them? I know Dr. Jones and recognize his committment to the sciences and to young people to learn and understand science. I commend him and his colleagues for a great job. CP Riddick
- I believe that the site is very well put together. The links made it very easy to navigate through the site. The colors and icons made it very interesting, while capturing and maintaining my interest. A job well done.
- I bummed around on this tonight running at about 26.8K from a home computer. Initially the first page took about 50 seconds to load. Other pages took less time. There's a lot to explore here, and it's apparent that this isn't a simple page with links. It's attractive and eye catching. I hope you capture and catalog all the comments coming in here. They will be valuable in future endeavors. Jeff E.
- I checked out this site for just a few minutes, and I'm amazed at what I learned. I had no idea NASA was involved in so many areas that touch our everyday lives.
- I don’t know how I found this site, but it is cool.
- I plan to become a space shuttle pilot.
- I think it is a great web site. It is a wonderful learning tool for individuals who want to gain useful knowledge in the fields of global science.
- In my opinion, too much emphasis on spinoffs, not enough on NASA's basic purpose and mission. Spinoffs are not an efficient way to transfer technology to the private sector or to individual citizens. Why not just develop those "spinoffs" directly, rather than burdening the space program with justifying itself this way and showing the public how it helps nonspace activities?

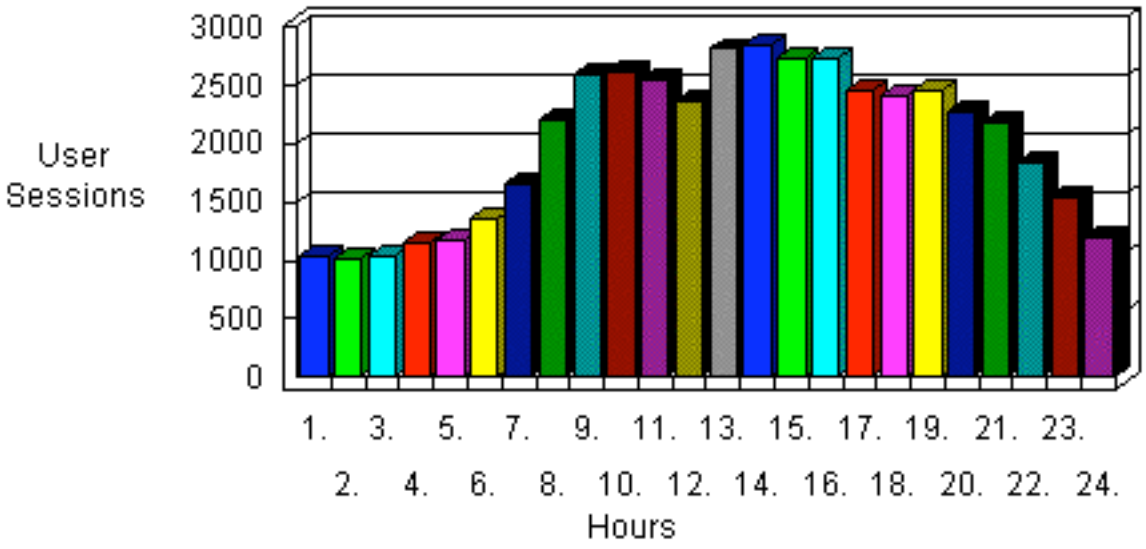
- Need bigger fonts and more colors; difficult to see the top image and sentence. Have the youth give feedback too.
- Not easy to find the MAIN MENU button to return to first page. Also the pages that opened up another copy of IE or Netscape are very annoying. They seem to leave the theme of the site and are presented differently, which makes it hard for youngsters to follow.
- Overall great site. The only comment that I have is that I would like to see a greater difference between the activities in the different age group section of the site.
- Put dates for the week on the home page; make all content reader friendly—not boring; liven up colors— this should look like it's fun and exciting, and that is not the impression this site gives.
- Scrolling down the "citizen page" caused it to reload with each mouse click of the scroll bar. Activities not what I'm looking for—would rather see some good data—what are the current spinoffs, not a trivia quiz.
- The Inventor Link: While the rest of the country is attempting to attract young men and women into science and engineering fields, it is a challenge to overcome stereotypes of inventors. It would help us greatly if you wouldn't use the stereotypical inventor (in lab coat, male, and balding) in your link to inventors. Signed: A female scientist and engineer who works with the education community on behalf of NASA.
- This site sucks.
- This web site was put together very well and was very interactive. Topics were very educational and easy navigation from one page to the next.
- Very interesting, very well done.
- Yeah, guys, the site is great! I luv science and the future: D technology—I like the sound of that ;) U`re CoOl ,especially interested in deep space exploration, I'm a fan of the S.E.T.I oriject, uknow, too..So, see u, dudes! I'm a 17/girl from Bulgaria, and I'm exploring the Universe I live in ;))
- You had created a simply superb site and really useful information can be easily get by anyone. Thanks for creating such a site, and NASA always helps students like us to explore space and get interested in subjects like science and technology. Thank you very much NASA for making our interest in it.
- I was pleased to see such a site.
- I think that if you take the registration off of the games more people would play them!!!!!!!!!!!!!!!
- Great site!!
- Didn't have enough time to let it 'work-in' on me.
- dear sir i am a rizwan from sri lanka i did visi the nasa web sude now i wand to get more details about that pls send details to…

Appendix C

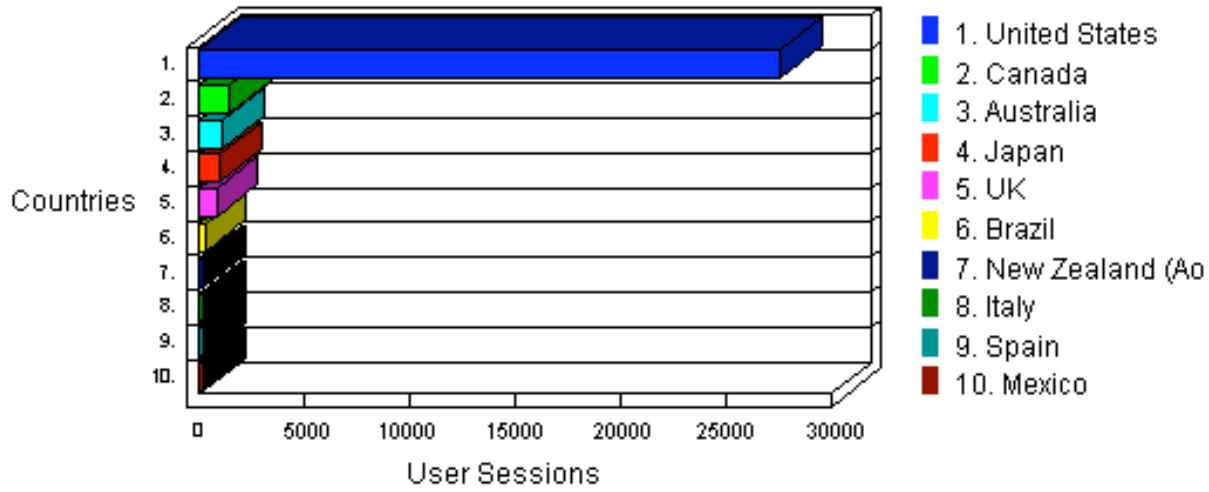

Most Downloaded Files
User Sessions
60
50
40
30
20
10
0
04/20
04/24
04/28
05/02
05/06
05/10
05/14
05/18
05/22
05/26
05/30
Sat 04/20/02 - Fri 05/31/02 (8 Week Scale)
gstw poster F.pdf
flyer.pdf
gstw poster B.pdf
press.pdf

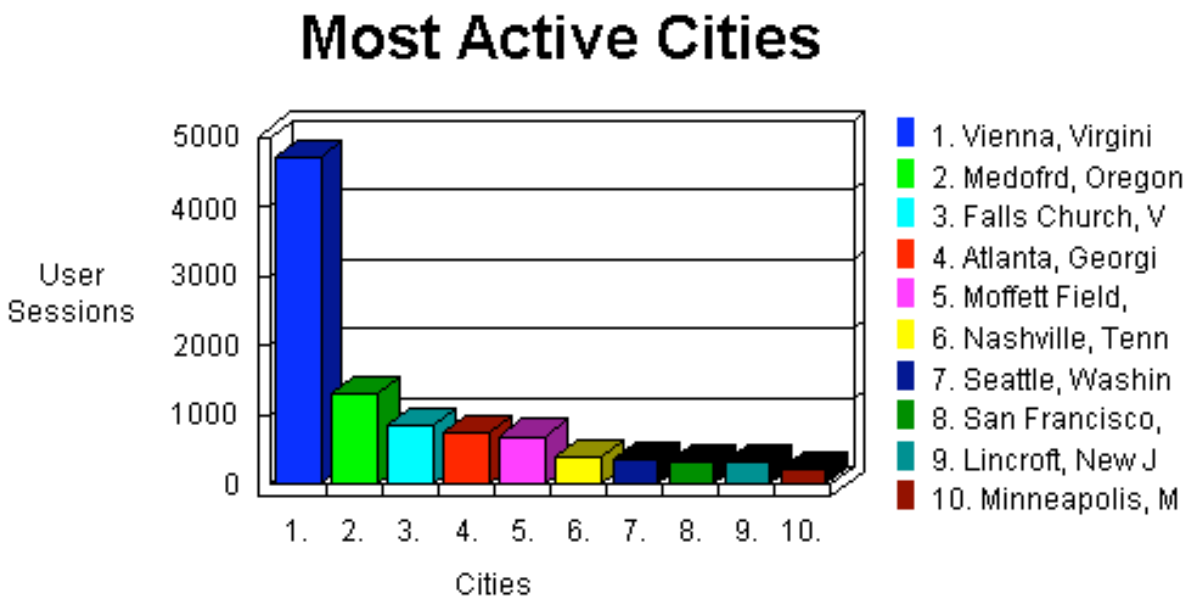

Activity Level By Day of Week
User Sessions
10000
8000
6000
4000
2000
0
1.
2.
3.
4.
5.
6.
7.
Weekdays
1. Sun
2. Mon
3. Tue
4. Wed
5. Thu
6. Fri
7. Sat

Activity Level By Hour of Day



Most Active Countries




Most Active Cities
User Sessions
5000
4000
3000
2000
1000
0
1. 2. 3. 4. 5. 6. 7. 8. 9. 10.
Cities
1. Vienna, Virgini
2. Medofrd, Oregon
3. Falls Church, V
4. Atlanta, Georgi
5. Moffett Field,
6. Nashville, Tenn
7. Seattle, Washin
8. San Francisco,
9. Lincroft, New J
10. Minneapolis, M