

## OVERVIEW

The MSPnet project is now in its 32<sup>nd</sup> month since receiving its award letter; it's a little over two years (26 months) since the launch of MSPnet. The site continues to grow in its content, in its sophistication, and in its use by the MSP community and by the public at large.

MSPnet serves as the electronic learning network for NSF's MSP program. Its cutting edge architecture has allowed for the creation of "nested communities" reflecting concentric and overlapping memberships of participants in the MSPs. Each person belongs to a particular project, but also to subgroups within that project. The project itself participates in the community of projects, which then enables the individual to connect to counterparts in other projects.

At the center of MSPnet is the Hub which serves as a distribution, dissemination and communications center for all 71 MSP projects. In addition each project is provided with its own interactive space. All of the project spaces link seamlessly with each other and with the Hub. Hence, counting the Hub, the 71 projects, an allocated space for NSF program officers, and a newly created space for state coordinators of ED's MSP program, MSPnet has created an interconnected Web of 74 URLs. This structure creates many opportunities, as well as challenges. It has provided each MSP with the opportunity to create an interactive community of practice for its constituents, but it requires that each of these spaces receive some attention and facilitation from staff within each MSP, supported in turn by MSPnet.

The system is "intelligent" in that it allows different degrees of access to individuals based on their affiliation to a particular MSP project, as well as on the position or role held within that project. As such, each MSP project space provides greater access to its own members than to members of other MSPs, and more access to members of other MSPs than to the public at large. Within each space, senior staff are provided with full Hub membership which allows such individual to interact with leaders of other MSP projects, whereas less senior members are provided with "project only" membership and can communicate only with members within their project. It is up to each project to decide who will have Hub membership, and who will have membership only of their project space.

In addition, each of these 74 spaces has an allocated contact person and at least one administrator. Project contacts answer queries sent by project members and guest to their site. Administrators can approve new member applications, add multiple members, assign member access levels, approve new Working Groups, and edit and post to restricted areas. Hence, while the MSPnet Hub is facilitated by TERC staff, project administrators play a pivotal role in facilitating the activity within each project space. Thus, intrinsic to the design is the idea of distributed leadership, which has motivated more of our activities in the past year.

The goals of MSPnet (as presented in our logic model in our first annual report) remain to:

- Increase individual members' awareness of the goals, activities, and emerging research of the **MSP program as a whole**, encompassing the efforts of Comprehensive, Targeted, Institute, and RETA MSPs.
- Increase sharing and access to resources, tools, research, and conference archives **among MSP projects**.
- Increase communication of partners and constituents **within** MSP projects.
- Increase the dissemination of activities and finding to the **public**.
- Increase understanding of the role of electronic communities of practice in fostering systemic reform efforts.

During the last 12 months these goals have provided a blueprint for our activities, including our technical development, community development and outreach, enriched site content, research, and related activities. Each of these will be discussed below.

## I. TECHNICAL DEVELOPMENT

The technical development can be divided into three arenas:

1. Behind the scenes functionality
2. Administrative functionality
3. End-user functionality and features

1) "Behind the Scenes" functionality: This refers to evaluation tools, which are never seen by our users, but enable MSPnet researchers and facilitators to get a sophisticated view and understanding of site use by individual users, users that share common roles, and by projects. While the first tier of such tools was developed in Year 1 of the grant, they were significantly expanded in Year 2 to include the ability to view users on the site in "real time." Tools now allow us to create overviews of "posting" activity in working groups, discussions, e-mail, etc., to create overviews of user publishing to Library and Resources, and provide the ability to track first time log-in.

During the last eight months (since our last annual report was submitted), we have continued to make progress in this area. We have created new reporting formats to serve requests from the Knowledge Management and Dissemination project, as well as new functionality that allows us to view any particular page or event (e.g. Deborah Ball's video/slide presentation), to see how many page requests and sessions the page commanded, and to differentiate between member and guest requests. Most recently, we have added the functionality to follow users paths through the site in real time. While we will never use this functionality to pry into the individual pathways of a particular individual, it will provide a window into understanding patterns of use and user-interface work flow.

The reports that are generated by these tools allow MSPnet staff to be more proactive in communication with constituents. For example the first-time log-in report allows us to follow

up with first-time users and welcome them to the site. We can also see those users who did not complete the log-in process and can help them with any difficulty they may have encountered.

- 2) Administrator functionality: These enhancements serve TERC MSPnet administrators who facilitate interactivity on the Hub, but some of these functionalities also serve administrators of each MSP project. Each project has elected one or more administrators who approve or decline membership within their project space, update sensitive project information such as project descriptions, and publish or hide content as deemed appropriate.

Major administrative updates include functionality for TERC staff to make simultaneous publishing updates across all project spaces, multiple new workflow controls to ease publishing, editing, and hiding of content, and functionality to enable an administrator to view a page as a guest would (i.e. a member of the public) and as a project member would view it. This enhancement is especially important for administrators to be confident of what content is available to their project only or to the public at large. For example, the new update allows administrators to select and change the visibility of their project calendar (e.g. visible to the public or members only.)

During the last eight months we have added some new tools for administrators to gain further control over their project spaces within MSPnet, especially within their libraries and working groups. New functionality (and a customized view of the site) was provided so that administrators can view any library item and change its visibility. For each library item they can select whether it should be available to the public at large, to all MSPnet members, or to project members only. They also have the option to hide posts that they feel have become outdated or should not be visible.

Within working groups, new functionality was added so that posts could be deleted by the contributor, the moderator, or the site's administrator. This functionality was also built in order to give projects more control over the content on their site.

Administrators are now given the option to allow all project members to create new working groups (some of which can be private and hidden even from the administrator) or to retain control over the creation of new working groups, by requiring administrator approval before going live. This option was created because some projects have a more "democratic" philosophy and desire *ad hoc* small collaborative groups to form, whereas other administrators prefer to assert more control over how collaborative groups form and develop.

- 3) "End-user" functionality and features:

Within the last eight months several new functionalities and features have enhanced the user's experience of the site. Below are some of the major new additions.

#### MSP LNC Online Registration

We created the MSP Learning Network Conference Registration functionality which is seamlessly tied to the site's database. As more than 315 registrants registered for the site, their contact information, bio, and project affiliation were instantly updated on the site. A

wait-list functionality was also built with careful consultation with NSF so that it met their needs. Feedback from recipients indicated that the registration was intuitive, simple, and painless.

#### Calendars added to working groups, and customized for every project member

Working groups were enhanced so that each working group now has its own calendar. Furthermore, each member can now see two views of their project calendar. The first view shows all events that are public to all project members. The second view shows project events as well as events scheduled within their own working groups. This means that the calendar is customized for every individual, and will appear differently depending on an individual's working group affiliations.

#### Help feature improved

A major improvement was made by overhauling the site's online Help. The new enhanced system provides documentation on every page relevant to the specific area that the user is accessing.

#### Video/ Slide/ Text Presentations

Through a Flash video format we were able to stream the entire video presentations of Deborah Ball, Terry Joyner, Richard Elmore, Richard Ingersoll, and Phil Sadler. These presentations not only show the entire video, but bring up the slides presented when they are referred to. Text is also interwoven to make these presentations accessible to the hearing impaired.

#### Member Site Contributions

Most recently we have added a "site contributions" section to every members bio page within MSPnet. Now when you click on the hyperlinked name of an MSPnet member (from within the Search and Mail, working groups, etc.) you will be taken to that person's "bio" page. In addition to biographical information you now see a listing of items authored for that person. For example, on Deborah Ball's bio page you will now see:

#### Site Contributions:

<b>Posted</b>	<b>Title</b>
03/01/06	Knowing and Using Mathematics in Teaching
02/22/06	Reaching for Common Ground in K-12 Mathematics Education
03/16/05	Effects of Teachers' Mathematical Knowledge for Teaching on Student Achievement
10/27/04	Developing Measures of Teachers' Mathematics Knowledge for Teaching
10/27/04	Learning Mathematics for Teaching: Results from California's Mathematics Professional Development Institutes
10/26/04	Interweaving Content and Pedagogy in Teaching and Learning to Teach: Knowing and Using Mathematics
05/20/04	Learning Mathematics for Teaching
01/08/04	Developing Mathematics Reform: What Don't We Know About Teacher Learning -- But Would Make Good Working Hypotheses?

## II. COMMUNITY DEVELOPMENT AND OUTREACH

At the launch of MSPnet 26 months ago, 351 senior staff members of the MSPs who attended the first MSP Learning Network Conference were pre-registered as members of MSPnet. By June of 2004 (first annual report), MSPnet had 1,039 members and by June of 2005 (second annual report) membership had increased to 2,516 members. Now, as of March 2006, the site has over 3,705 members.

The site was structured so that each project's administrators could add new members or could approve (or deny) individuals who applied to join. Hence membership to MSPnet is only open to individuals who are associated with a particular MSP. Despite this restriction, membership to MSPnet has grown steadily.

Projects have chosen to list 1,987 people as Hub members and 1,718 as project-only members. Hub members can communicate with colleagues across the MSPs whereas those who are project members only can communicate with other colleagues within their project.

The growth in membership can, at least in part, be attributed to significant outreach efforts on the part of MSPnet staff. These efforts have included: the development and dissemination of print materials which describe the main functionalities of the site; short plenary, poster, and breakout presentations at the annual MSP Learning Network meeting; participation in some workshops and conferences hosted by RETAs during the year; phone contacts with constituents; focus groups that have included leaders of eight different MSPs; and continuous online support and communication. MSPnet has received over 600 contact messages this year sent through the site, and many more sent directly to staff to their e-mail addresses. All of these queries were responded to.

One major effort, which keeps MSPnet in weekly contact with all its members, is the electronic newsletter "MSP News." Two versions of this newsletter are created each week (biweekly during the summer), one for Hub members and one for project-only members. The Hub newsletter includes programmatic information such as announcements about the next Learning Network Conference, or announcements that are more relevant to the leadership of a project.

We have received excellent feedback regarding the newsletter from members who have written that it is "particularly informative," and "keeps them coming back to the site." Recent survey results (shared in the Research Findings below) confirm the value of the newsletter to the community.

### Administrator Workshops

MSPnet is a very rich site. There is a lot of content and a tremendous amount of interactive functionality. Administrators are given options to customize the visibility of items on their space as well as the access for members within their projects to certain functionality (e.g. the ability to initiate a work group). Yet, as is the case with all software, most users only know (and use) only a fraction of the capabilities available. In order to enable projects to make better use of MSPnet,

we have offered three workshops for project administrators, and we will continue to offer such opportunities within the next year.

These workshops not only provide MSPnet staff with the opportunity to introduce new functionality (in a face-to-face setting), but also provide staff with an opportunity to hear feedback from our users. Users' questions, confusions, concerns, and wish-lists all feed into our priorities of technical development.

Participants from each of the following projects attended an administrator workshop:

- PRISM
- IAS/Park City
- ED's MSP State Coordinators
- UMBC-BCPS STEM Project
- PROM/SE Project
- SWPA
- Fulcrum Institute
- CAMS
- University of Pennsylvania Teachers Institute
- MSP in NYC.

### **III. COLLABORATIVE EFFORTS**

Our collaborative efforts with various constituencies include:

1. Coordinating our work with NSF
2. Enabling sharing of work and collaboration between NSF's MSP program and ED's MSP program
3. Coordinating our work with the annual MSP Learning Network Conference
4. Collaboration with other RETA projects
5. Providing Connections to other NSF programs
6. Next Advisory Board to be held in November 2006

1) Coordinating our work with NSF: Throughout this past year we have had regular meetings with our program officer in person and by phone, and been in consultation with other NSF program officers in reference to new projects, new personnel, and the planning of the 2005 Learning Network meeting.

2) Enabling sharing of work and collaboration between NSF's MSP program and ED's MSP program: This year there has been an increased emphasis on enabling the sharing of resources and emerging lessons learned between NSF's MSP program and ED's MSP program. To help, TERC has offered MSPnet membership to State Coordinators and have provided them with their own space within the site, with several resulting benefits. First, State Coordinators now receive weekly news updates that inform them of new articles, research, tools, and resources that have been posted on the site. Second, when they log in they see a customized homepage which is updated weekly to link to new or highlighted features on the site.

Third, they have an allocated space that affords them the opportunity to share files online, have discussions, send group mail, create an online library and resource center. State Coordinators can utilize this space to create working groups where they can share and archive files and have online discussions on topics of interest. Working groups can serve small or large groups within the State Coordinator space. In addition, State Coordinators can build their own library and resource center and can copy library and resources that interest them from the Hub. They can use the Search and Mail feature to send mail to groups or individuals within the State Coordinator space. Last, they could use the calendar to post upcoming events. The calendar could be made visible to the public at large, or could be visible only to other State Coordinators.

In order for State Coordinators to take full advantage of these interactive functionalities, one or two individuals from within ED should be positioned to provide on-line leadership in creating working groups, maintaining membership, and facilitating discussion.

In addition to work on line, MSPnet staff attended an ED MSP conference on October 20<sup>th</sup> in Washington DC and presented MSPnet during a break out session. Most recently MSPnet staff attended a regional ED MSP meeting in Boston on March 29<sup>th</sup> with Pat Ross, Mike Kestner, and Pilla Parker from ED, and Kathleen Bergin from NSF to continue the conversation on collaborative online efforts.

3) Coordinating our work with the annual MSP Learning Network Conference: MSPnet provided online registration this year for the community for the first time, and informed the community of upcoming conference information as it became available. The conference registration was carefully coordinated with members of NSF to ensure that it met their needs. An administrative back-end interface was created so that NSF had a “live” view of the number of registrants from each project which was accessible to them at any time.

MSPnet contacted plenary speakers prior to the conference to request their permission to videotape their sessions with their overheads. At the conference MSPnet subcontracted to have these speakers videotaped, and as a result all five plenary talks are available through streaming video (with accompanying text and overheads) on the site. In addition MSPnet professionally documented the conference in order to provide full conference proceedings, as we have done in previous years.

4) Collaboration with other RETA projects: MSPnet has worked collaboratively with several RETAs helping them to disseminate their instruments, recruit participants, announce their workshops and disseminate results. Some examples of work that has taken place in the last eight months include:

- Creating an archive of papers given at the MSP Evaluation Summit: Evidence-Based Findings from MSPs Sept. 15-16, 2005.
- Creating and hosting archives of four workshops offered by the National Academies of Science
- Providing spreadsheets and data to the Knowledge Management and Dissemination Project

To view documentation from RETA conference go to:  
[http://hub.mspnet.org/index.cfm/other\\_conf](http://hub.mspnet.org/index.cfm/other_conf)

During the next year we will be working closely with RETAs, particularly those who are near completion, to help them disseminate results via MSPnet. We have also been in conversation with Horizon's KMD project to develop ways to support their work and disseminate their results.

5) Providing connections to other NSF programs: MSPnet is an effective vehicle for making the broad membership of MSPnet aware of other NSF initiatives. Some examples of this are:

- Providing links to emerging research from the Center for Informal Learning and Schools
- Announcing Updates from the National Science Digital Library
- Providing links to new solicitations of interest to the community such as the new MSP solicitation and the new REESE solicitation.

6) Next Advisory Board to be held in November 2006: We will hold our next full advisory board meeting the first week of November 2006 where our advisors will offer feedback on our technical development, content development, quality control, and evaluation efforts.

#### **IV. ENRICHED SITE CONTENT**

This past year, MSPnet staff have continued to solicit contributions from the community to build the content on the site. The community is becoming more active in not only reading but also in posting material both to their individual MSPnet project spaces as well as to the Hub. As a result MSPnet contains a wealth of information that is relevant to MSP leaders and staff.

Currently there are over 4,858 "objects with text" on the site, and over 11,741 pages. The content is well structured so that the user can navigate all of this material without feeling overwhelmed. MSPnet staff highlights material weekly, and new additions to the site are automatically highlighted on the header pages of each section. For an example of this see <http://hub.mspnet.org/index.cfm/library>

In addition this year MSPnet has automated a way for new objects to be highlighted on each project's homepage.

Major areas where content resides include:

- The Project Showcase contains project descriptions for each project as well as 76 press releases, 57 MSP project reports, and 35 MSP project PowerPoint presentations.
- The RETA showcase highlights the work of each RETA and offers a PowerPoint presentation for each.
- The Library contains over 631 papers in full text. Over 516 of these relate to Educational Change and Policy, 214 relate to Professional Development, 240 to Teaching and



Learning, 170 to MSPs Five Key Features, and 44 are MSP Papers (written by or about an MSP initiative). Some of these papers relate to more than one category.

- The Resource Center links to 165 Useful Websites that connect users to websites that are the links to important organizations that are engaged in Math and Science Reform (e.g. NARST, National Coalition for Equity in Education), link to databases (e.g. ERIC, Eisenhower National Clearinghouse), or provide resources on math, science or technology education, and to sites that address professional development, standards, assessment, equity, and public engagement. The Resource Center now holds 15 tools submitted by MSP projects such as assessment instruments for MSPs from MOSART and the Logic Model Builder.
- The Conferences section links to STEM conferences of interest to the MSP community. It also provides information on workshops being offered by different RETA projects. It also provides comprehensive proceedings from the 2004, 2005 and 2006 MSP Learning Network Conferences with substantial excerpts from most of the presentations. Many of the presentations have text, slides, audio and/or video available.

## **V. RESEARCH EFFORTS**

Our research efforts this past year have involved the following:

1. Monitoring and analyzing quantitative data of web activity
2. Focus groups with PIs/and project administrators
3. Case studies
4. On-line surveys.

1) Monitoring and analyzing quantitative data of web activity: Last year, the major effort in our research strand was the development and testing of a "reports" system which is designed to provide a wide range of data on MSPnet use. The database can now be queried for information about user activity in the aggregate, and also disaggregated by individual, role, and project for any period of time. This allows us to identify areas in which projects or individuals are becoming more or less active, as well as other evidence about frequency and level of use. This in turn has enabled us to gather information about the effects of our technical support. For example, staff from the Boston Science Partnership came to TERC to learn more about the potential of the site, and to discuss with us ways they could use it within their project. We were able to see what they did in consequence, and see the response from project members.

In addition, the data about web activity has provided the basis for further investigation of projects' communication patterns, including qualitative analysis of working group activities, analysis of posts to the Hub and project spaces, analysis of the proportion of members active in each project, and similar queries.

Last, our analysis of activity has guided our choices of sites for case study work, which has begun in earnest this year.

Data for the past year is reported in the section "Research Results" below.

2) Focus Groups and workshops: Early in 2005, our research convinced us that it was important for on-line leadership capacity to develop in each MSP, if projects were to take best advantage of MSPnet for their work. Thus, outreach became a high priority for the year; first results were mentioned in our report for Year 2. We have continued with that effort this year.

In the fall of 2005, we developed an Administrators' Workshop, and have conducted three sessions so far. In December of 2005 TERC held its first MSPnet administrator workshop at TERC. Participants included Roxane Johnson from the Fulcrum Institute, Matt Freedman from SWPA, Felicia (Dee) Infante from CAMS, Jane Horwitz from University of Pennsylvania, and Lisa Hottle from the MSP in NYC.

This workshop was then repeated twice in Washington DC on January 29<sup>th</sup> and was attended by Sheila Jones and Dorothy Zinmeister of PRISM, Catherine Giesbrecht of IAS/ Park City, Lou Maynus from the ED, Dinah Little and Kimberly Grabarek from UMBC-BCPS STEM Project, Susan Pettit Riley from PROM/SE, and Norman Hipps from SWPA.

The workshops had two purposes. First, they enabled projects to become more aware of interactive capabilities on MSPnet which could serve their projects' needs. Second, they provided us an opportunity to collect information from projects about project communication needs, and functionalities that would serve the project better in the future.

The discussions at both workshops were very valuable, first in giving us formative feedback about the needs of these MSPs (which included both targeted and comprehensive projects), and second in guiding our understanding of the relation between off-line communications and on-line communications within and between projects, including how MSPnet could fit in and be of service.

Several key themes helped us get a sense of the state of development of particular MSPs and how the growth of internal communication/community might contribute to communication/community between MSPs. The participants emphasized that each project needs time to build a community within their own project first, since obviously there is great pressure to meet milestones and develop the effectiveness of these complex partnerships. They also agreed that face-to-face and personal relationships were essential to complement and deepen virtual relationships. The need to develop face-to-face as well as virtual relationships with partners, expressed in focus groups and other feedback earlier in the year, as well as in these workshops, shaped our decision to explore the relationship between on-line and off-line communication within our first case studies (discussed below).

3) Case studies: In-depth case studies provide a rich opportunity for researchers within MSPnet to study the value of electronic communities in fostering collaborations between large scale partnerships. While quantitative data tell us what sections of MSPnet are being used, by whom, and how often, it can not tell us why people are choosing to use it (or not,) nor the value which they are deriving from its use. To understand the nature of collaboration online, we felt that we needed an in depth understanding of the nature of the collaborations that were taking place within and among these projects in general. To this end we have been engaged in three in-depth case studies.

The case studies which are described in depth below involved multiple site visits, document review, analysis of community structure, interview with constituents in several sub-communities, and the completion of questionnaires.

Each of the three case study projects participated enthusiastically and openly. Interviewees often shared challenges to collaboration within large scale projects such as the MSPs in general, and then addressed strategies that were employed in face to face communication as well as in on-line communication. It is important to note that these projects were assured that we were not evaluating their effectiveness or achievements, but rather trying to understand the nature of collaboration across institutional and geographic divides to better understand the functions, and limitations of an on-line electronic network such as MSPnet. In addition, these projects were promised anonymity. Published articles will use pseudonyms and will extrapolate lessons learned across the three projects. The non-evaluative nature of the research, as well as the promise of anonymity were essential in allowing PIs, teachers leaders, higher education faculty, to speak honestly of communication and collaboration challenges as well as the process and progress of building communities within and across institutions.

Four researchers, three from MSPnet and Wes Shumar from Drexel University participated in site visits. In addition to this team of four, the PIs were engaged in discussion of the data and in analysis of results.

During the next six months we will have final case study reports for our three MSPs, plus one cross-case analysis. To date, we have completed data collection for two of the case studies and will have completed data collection for the third by May 2006.

The following questions guided our case study research:

1. How are MSPs formed, facilitated, and sustained over time?
2. How are subgroups (i.e., subcommunities) formed, facilitated, and sustained over time?
3. What are the experiences of participation among individuals in an MSP and its subgroups?
4. How do online and offline communication/collaborative structures relate?
5. How can MSPnet better serve MSPs and their subgroups and individuals? How do MSPs' independent (i.e., non-MSPnet) sites complement, or compete with, MSPnet?

#### Data Sources

To answer our research questions, we employed five primary data sources:

- 1) Site visits: Typically, two researchers conducted one- to three-day site visits at each MSP. During the visits leadership meetings, meetings with IHE members, and professional development training sessions for school district teachers were observed. At each site, researchers took field notes, which are presently being coded and analyzed. The majority of the interviews were also conducted during the site visits.
- 2) Interviews: Seven to twelve individual interviews were conducted within each case study. Individuals were selected to represent a wide spectrum of perspectives and experiences.

Those interviewed assumed different roles within their MSP; included high, middle, and low MSPnet users; and included both men and women. Applying semi-structured protocols, individuals were asked to describe the subgroups—leadership team, teachers, IHEs, professional developers, evaluators, etc.—to which they belonged, how members of their subgroups typically communicated (e.g., face-to-face meetings, telephone, electronic mail, MSPnet, other paper or electronic means), and what enabled and hindered communication. When a computer and Internet service were within reach, interviews concluded with a 5-10 minute “simulation” exercise, during which the interviewee went onto the MSPnet website and demonstrated and talked-aloud during a “typical” usage session. If a computer or Internet service was not available, the interviewee was asked to describe a typical session with MSPnet. While most interviews were conducted in person, some were conducted by phone. Interviews ranged from 45 minutes to two hours in length. Each interview was digitally recorded and later transcribed. Following each interview, interviewers wrote summaries/content logs. Summaries/content logs and transcripts are presently being coded and analyzed with NVivo (a multi-media qualitative software) using an open coding, grounded theory technique (Strauss & Corbin, 1998; Glaser & Strauss, 1967).

3) Questionnaires: We sent follow-up, online questionnaires to each interviewee.

Questionnaires were created and sent through SurveyMonkey.com. The questionnaire contained 33 Likert-scale type questions and five open-ended questions. The majority of the questions pertained to how individuals used and felt about MSPnet in relation to their respective MSP and the MSP program as a whole. Questionnaires provided statistical, supplementary information to the interviews as well as qualitative suggestions for improving MSPnet.

4) Website usage: We qualitatively and quantitatively recorded and analyzed MSP members’ usage of MSPnet. Additionally, among our three case studies, two have completely independent, (i.e., non-MSPnet) websites dedicated to their MSPs. The third case study attaches its MSP calendar and other features to a separate, pre-existing site that serves the larger institutional education unit of which the MSP is a part. Even though these three MSPs have partial or full sites of their own, members rely on MSPnet, as evidenced by their MSPs high usage. We are in the process of qualitatively noting features of each MSP’s independent website for comparative analysis with MSPnet with regard to website purposes and functionalities.

5) Document review: We collected documents describing each MSP’s historical and infrastructural design (e.g., NSF proposal, strategic plan, etc.) to get a sense of each MSP’s partnership histories and project visions.

#### Data Collection and Analysis: Ongoing

We have written the first single case study report and are using the outcomes to refine our research instruments and questions for the upcoming reports. Early key findings indicate that these case studies will enable us to 1) understand the relationship between offline and online communication and collaboration; 2) address communication and collaboration challenges faced

by MSP partners who live and work far from one another; and 3) understand the relationship between members' independent project websites and project spaces on MSPnet.

## **VI. SUMMARY**

Our efforts continue in the area of community outreach, collaborative efforts, and research and evaluation. Each of the above informs our priorities and direction in technical development and expansion. It is truly an iterative process informed by the community who uses the site. Work over the last year has seen an increased emphasis on “professional development” of key staff, PIs, and administrators, so that they can become more facile in learning to use an on-line collaboration tool to further their own goals, and partnerships within their MSP.

Specific research findings are reported in the next section below.

## RESULTS

Research on MSPnet utilizes both quantitative and qualitative data to study how much the site is being used, as well as why it is being used.

Our tools for data collection involve:

1. Computer-generated use statistics on membership, page view counts, session counts, use by content area, use by project, use by role, and use by member.
2. Surveys sampling use across the community (targeting high-, middle-, and low-end users).
3. Workshop/ Focus groups with small groups of administrators to hear how people are using the tools, confusions that they have, and wish-lists for the future.
4. In-depth case studies of three MSPs which involve site visits, observations, interviews with 7-12 constituents, and questionnaires.

The research team has involved the participation of TERC staff, and has also involved consultation from Jim Dorward of Utah State University as well as Wes Shumar from Drexel University.

In addition to the results reported below, the reader may want to refer to a research paper, “MSPnet: Nested Communities Interacting Online” presented September 15<sup>th</sup> 2005 at the MSP Evaluation Summit. It can be accessed on MSPnet at:

<http://hub.mspnet.org/index.cfm/12834>

We report below on data on:

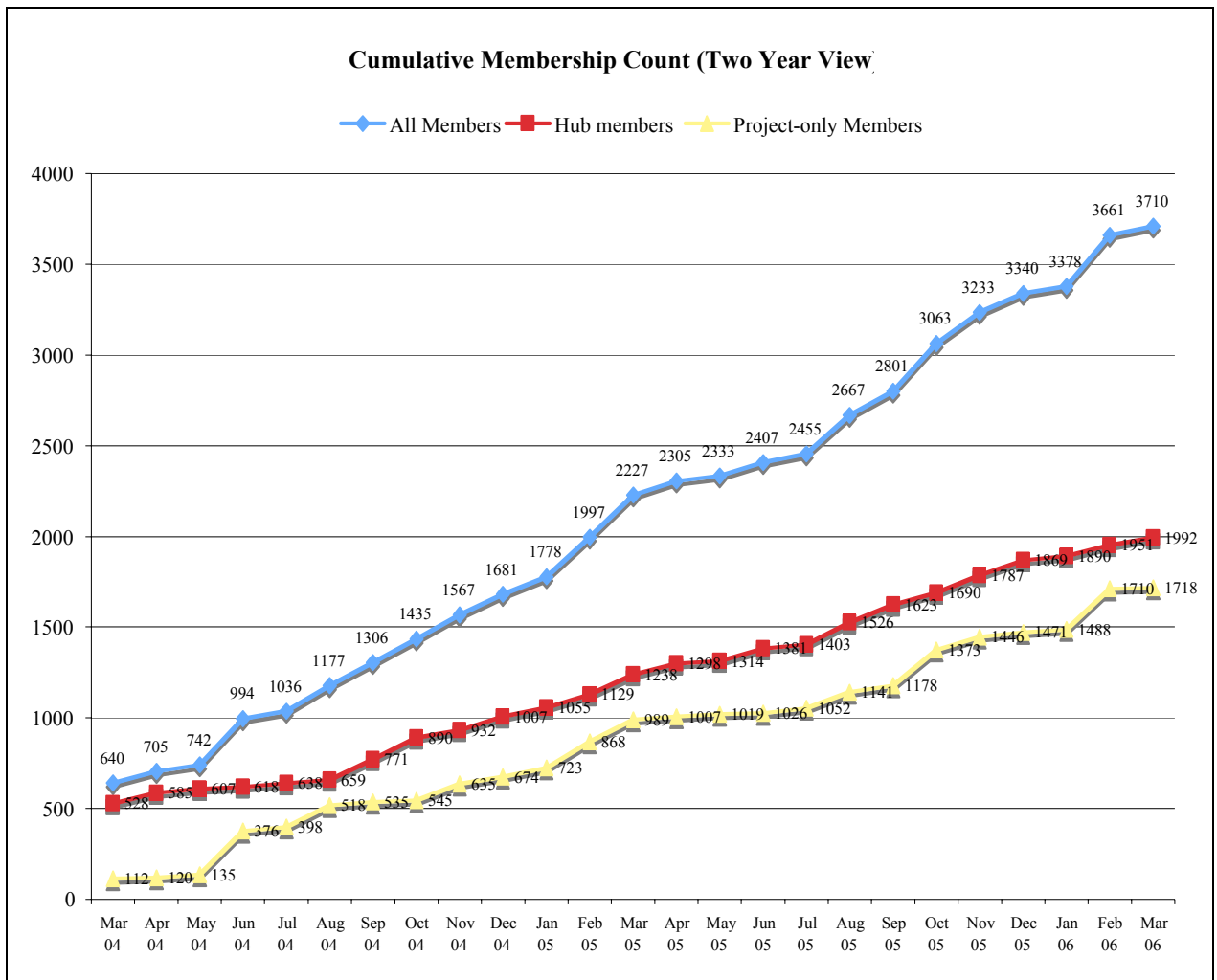
- the growth of the MSPnet community
- use by the public and by members
- patterns of use within the MSP community
- areas of the site that promotes use
- value added to the MSP community.

### Membership Growth

Membership within MSPnet is limited to “staff affiliated with an MSP project.” In order to gain membership an individual needs to be approved by an administrator of one of the 71 MSP projects. The number of members affiliated with an MSP project varies from 2 to 564 with an average of 52. Some projects build their membership base in order to communicate with teacher leaders and some of their teachers, where as other projects provide membership for leadership staff only.

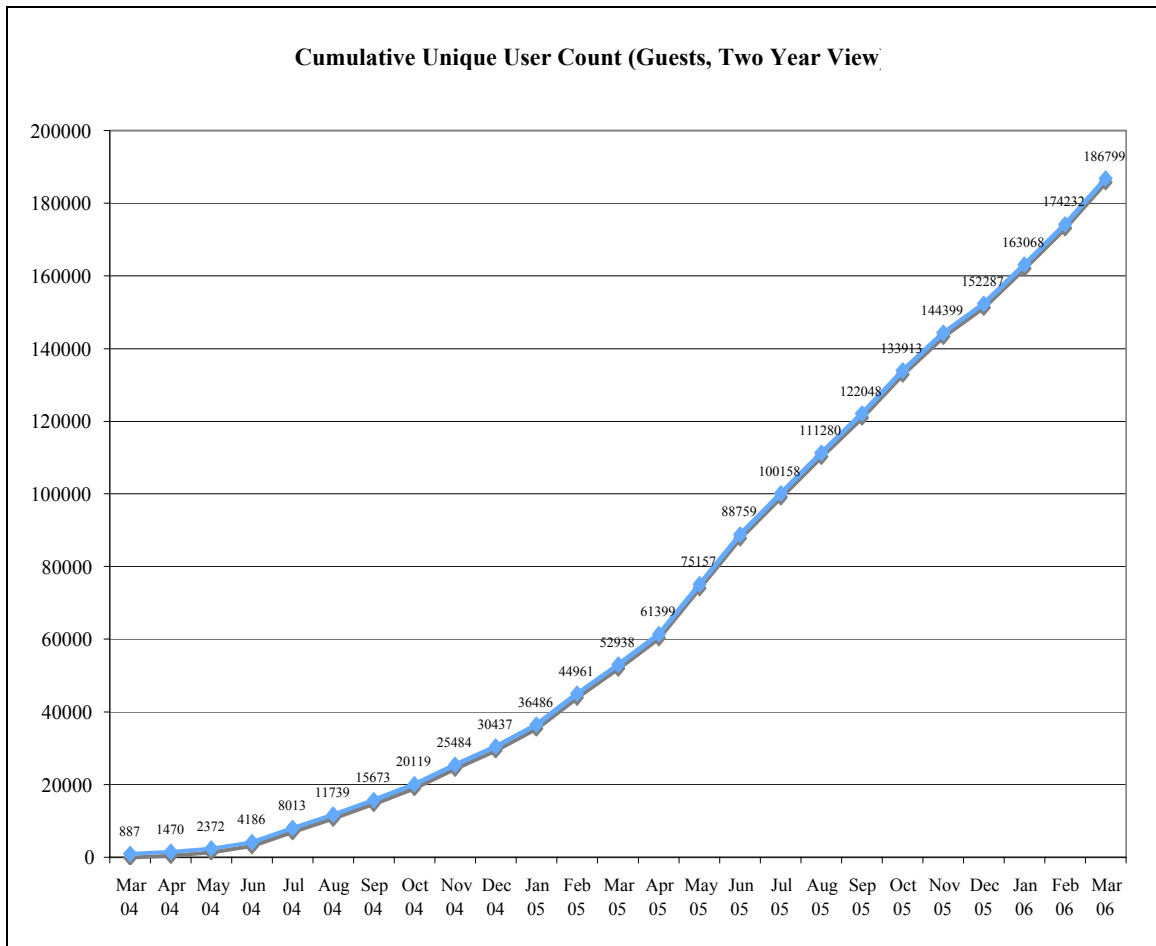
Membership is divided into two categories, Hub members (which is limited to 50 people per project) and project-only members. Hub members can communicate with leaders across all of the MSPs, where as project-only members can interact with members within their own projects. Both Hub members and project-only members have access to most of the articles and resources posted on the site. (Some resources are visible to small groups within MSPnet only.) In general, when projects add teachers to their membership, they add them as project-only members.

Membership on MSPnet continues to grow. At launch on January 28<sup>th</sup> 2004 MSPnet has pre-registered 351 members. Currently the site has 3,710 members, which is fairly evenly divided between Hub members and project-only members. The graph (Figure 1) below shows growth over the last two-year period.



**Figure 1: Membership Growth Over Two Years**

Public Use of MSPnet: In addition to MSPnet members, the site is accessed by the public. As the graph below (Figure 2) indicates, the number of unique guest visitors has increased impressively over the last twelve months from 52,938 to 186,799, a 353% increase! When members of the public visit MSPnet they do not log in, but we are still able to approximate the number of unique individuals who visit the site by using an algorithm that combines information about users' IP addresses with their Internet browser information.

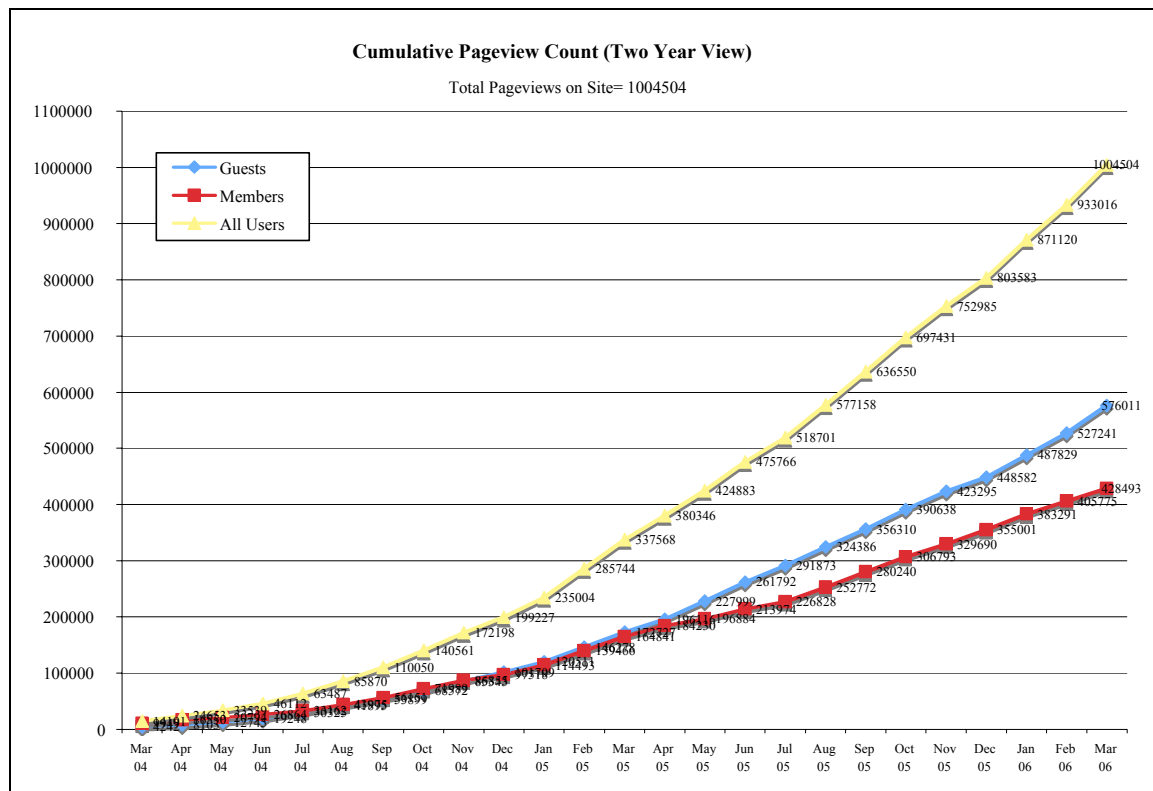


**Figure 2: Cumulative Unique Guest User Count (3/1/04 -3/31/06)**



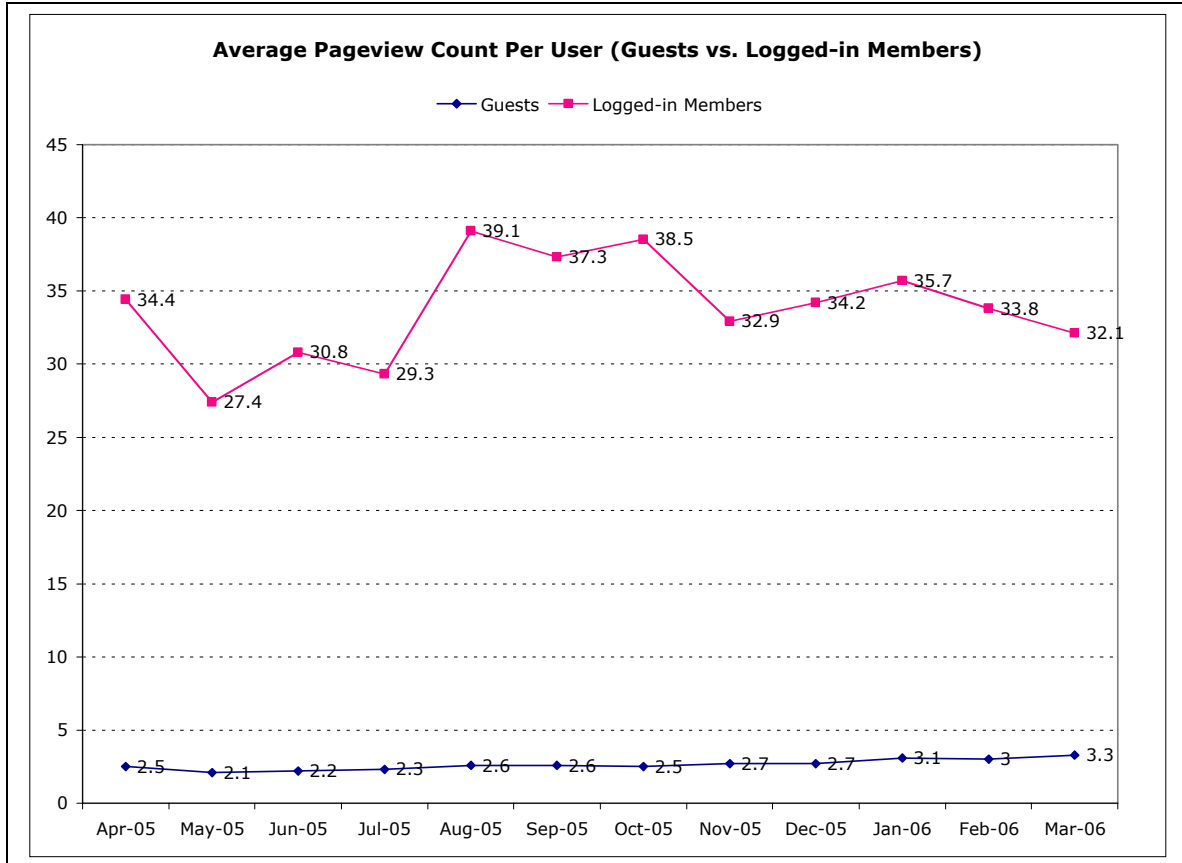
### Public vs. MSPnet Member Use

We look at many different units to measure use on MSPnet. The simplest measure is page-views, which can be understood in terms of number of clicks on the site. While this number is valuable for looking at trends over time, it only tell a small part of the story. When a member clicks on a pdf document or an hour-long video presentation on the site, it will count as only one page view, as it is registered by the one click. However, the member may read 100 pages within a pdf, or listen to the video while viewing slides that sync to the presentation for an hour or more. Nonetheless page views do tell us about trends, and one can see from the graphs below that both members and guests are accessing the site and reading many pages.



**Figure 3: Cumulative Pageviews**

Figure 3 shows cumulative page-views over time for all users, guests, and members. As of the end of March the site has logged over a million page-views. The graph indicates that 58% of page-views were accessed by guests as opposed to 42% which were accessed by members. However, one must bear in mind that members (3,710 members) make up only 2% of all “unique” people who have ever accessed the site (190,499 unique people). Given that 42% of all page views were accessed by members it shows that members have more sessions per person, and during each session they access more pages on the site. On average guests have had on average 1.4 sessions and 2.9 page views per person, per month, whereas members have had an average of 11.9 sessions and 121.3 page views per person, per month. See figure 4 below which shows the difference between guests and members in terms of page views per person, per month.

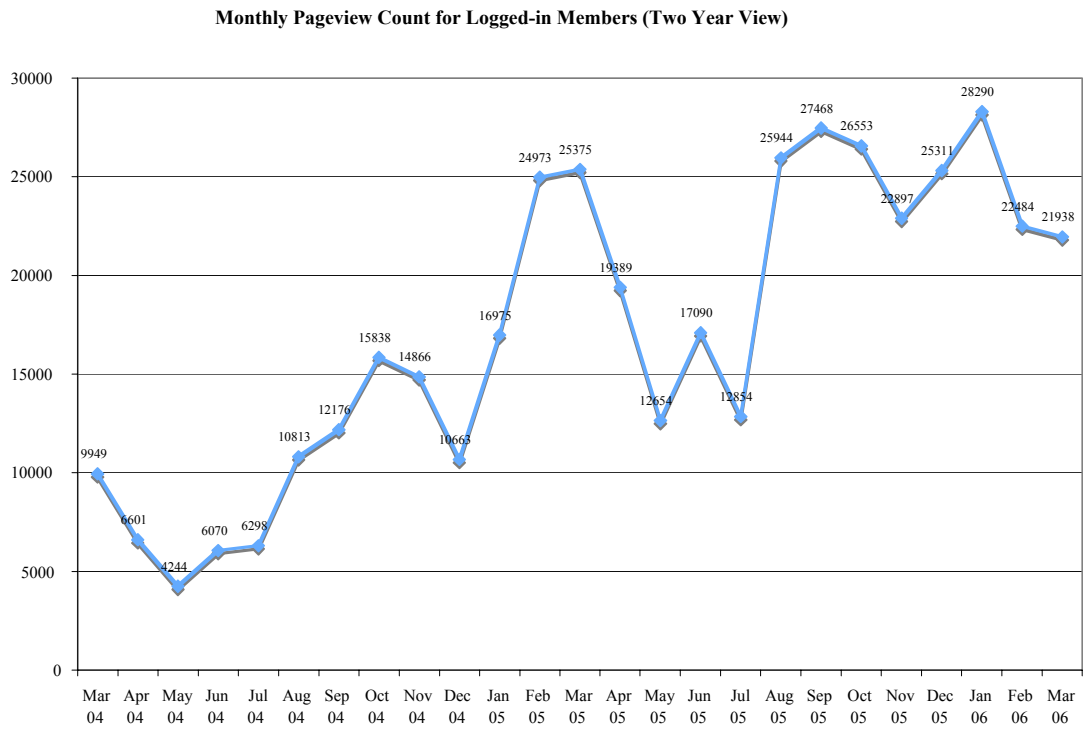


**Figure 4: Average Page-view Count Per User (Guests vs. MSPnet Members)**

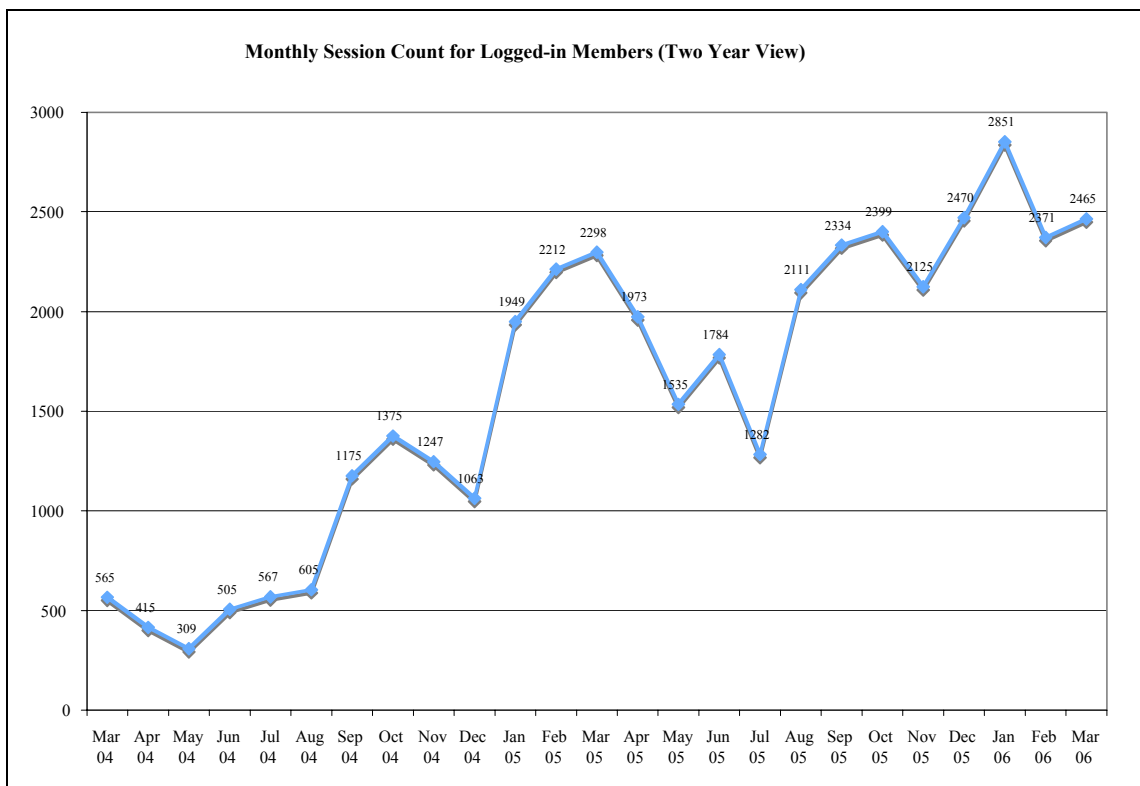
The frequency and the depth with which members (as opposed to the public at large) use MSPnet can be explained by many factors. First, the public has limited access to the site, in that contributors can choose whether their resources should be made available to the public at large or only to MSPnet members. Second, the public can read articles, resources, conference archives, and highlights in the project showcase. However, they cannot post to the site, they cannot send mail to groups or individuals through the site, they cannot see working groups within projects where discussions, and files are shared. Last, and perhaps, most obvious, MSPnet members have an investment in the site, because it pertains directly to the work in which they are engaged.

#### Understanding Use Within the MSP Community

When looking at the use of MSPnet within the community we see that usage patterns vary by month. Figure 5 below shows monthly session counts, and Figure 6 shows monthly page-view counts. In both graphs it is apparent that there is a general upward trend in member use over the two-year. While Figure 5 has peaks and valley, it shows that MSPnet members have accessed over 20,000 page-views in each of the last eight months.



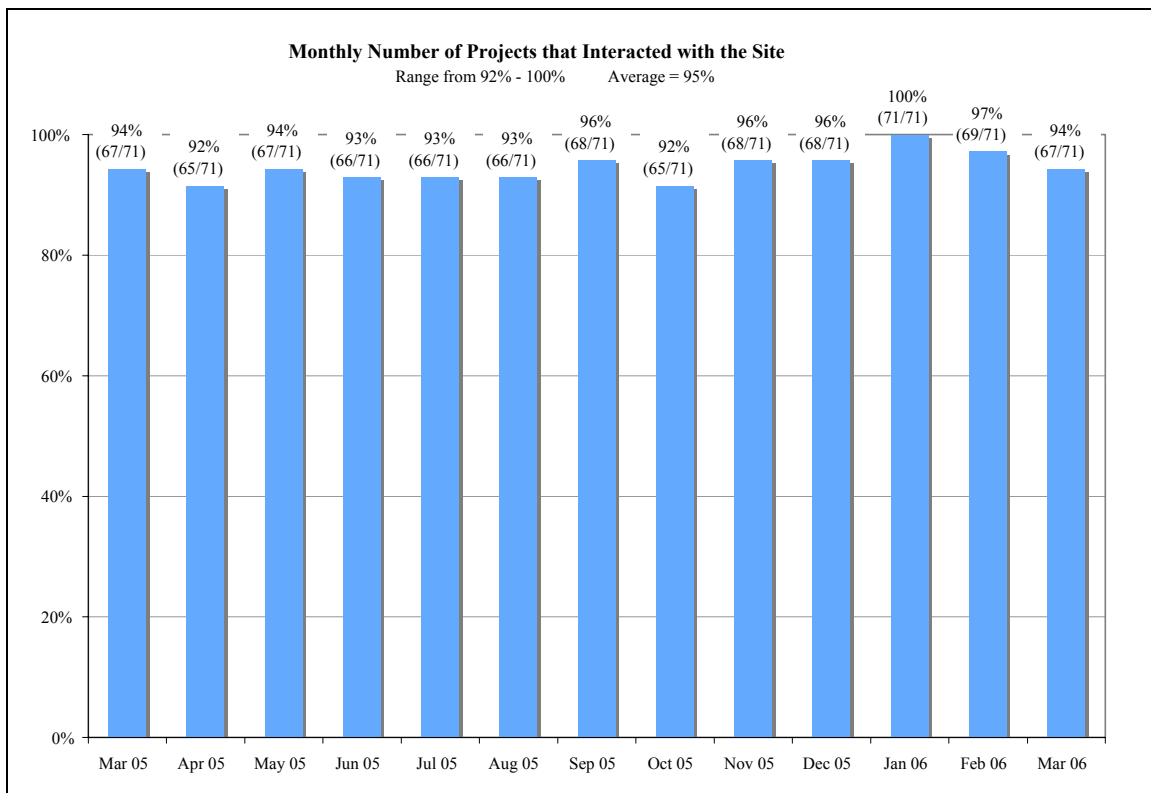
**Figure 5: Member Page-view Count by Month (Two Year View)**



**Figure 6: Member Session Count by Month (Two Year View)**

There is an annual peak in usage that occurs around the time of the annual MSP Learning Network Conferences. This peak occurred in 2004 (when MSPnet did not provide online registration) as well as in 2005 (when MSPnet did provide online registration). The peak is likely due to increased collaborative activity stimulated by face-to-face interaction. It is well documented that online collaboration works best in conjunction with face-to-face meetings.

Over the past twelve months all 71 MSP projects have accessed the site. As Figure 7 below indicates on any given month between 92% - 100% of projects log into the site, with an monthly average of 95% of projects logging in.



**Figure 7: Number of Projects That Interact with the Site Each Month**

Yet despite the participation of all projects in MSPnet, membership and degree of involvement has varied markedly projects from one project to another. At the high end, one MSP project has 564 members on the site. On the low end, one project has only 2 members. Factors that affect membership include the size of a particular MSP, the engagement and interest of the project leadership in having their members participate in an online community, and the need of a project for an online community (since some projects have their own independent websites.) Further exploration of factors that affect use are explored below.

In addition to variation in membership, we see variation in the degree of involvement. At the high end, one project has had over 5,635 sessions and 75,589 page views, while at the

low end an MSP project has had only 19 sessions and 225 page views. These discrepancies cannot be explained by the size of project membership alone.

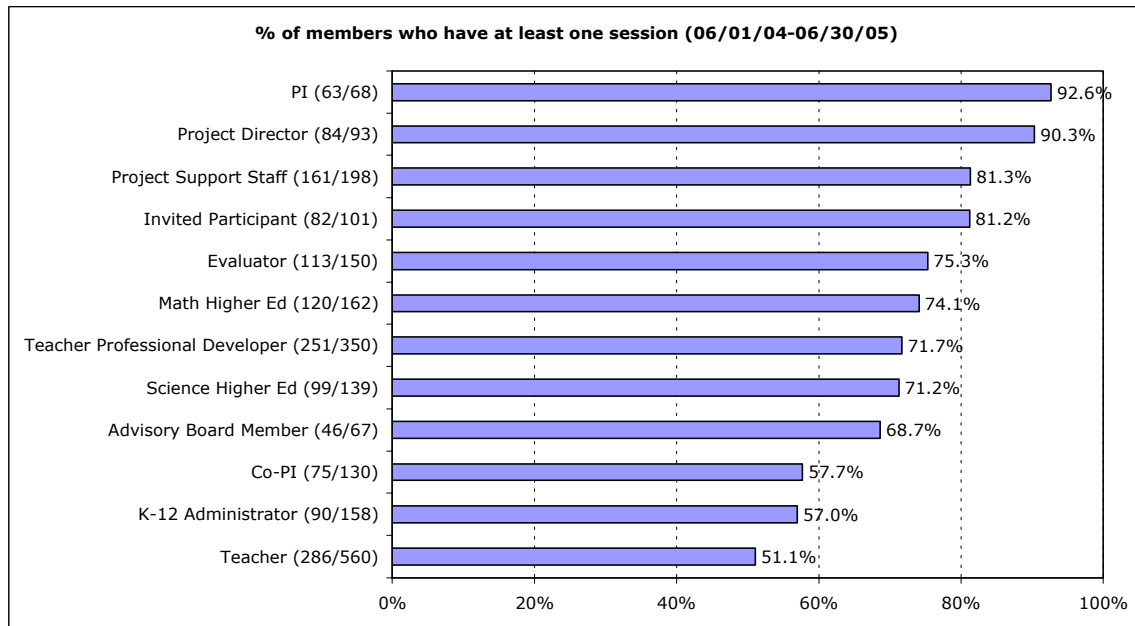
Below is a listing of the top eleven active projects over the last 12 months. As can be seen by the table below, that when looking at use, we look at multiple factors such as session count, page-view counts, post counts, membership count, and logged in member count. These factors all provide different parts of the picture.

*Sessions* is a measure of frequency. It tell us how frequently the site is accessed. A session begins when one logs in and ends when one logs out, or after they are inactive for twenty minutes. *Page-views* is a measure of how deeply they are sifting through the site. *Post count* is an indicator of the degree that project members use the site to contribute and to interact with each other, as opposed to reading only. *Membership count* informs us as to the breadth of the community. *Logged-in members* tell us the number of people who have logged in, once they have requested membership from their project.

<b>Top 11 Active Projects (based on activities from Feb. 05 – Mar. 06)</b>						
<b>Project name</b>	<b>Award type (State)</b>	<b>#Session count (rank)</b>	<b>#Pageview count (rank)</b>	<b>#Post count (rank)</b>	<b>#Membership count (rank)</b>	<b>#Logged-in members (rank)</b>
PRISM	Comprehensive (GA)	4904 (1)	67590 (1)	978 (1)	564 (1)	422 (1)
SWPA	Comprehensive (PA)	2328 (2)	25034 (3)	228 (2)	538 (2)	251 (2)
Facilitating MSPs	RETA (D.C.)	1937 (3)	14546 (5)	60 (9)	140 (6)	95 (4)
MSPGP	Targeted (PA)	1818 (4)	25907 (2)	100 (7)	294 (3)	172 (3)
Boston Science Partnership	Targeted (MA)	1448 (5)	18642 (4)	172 (5)	84 (10)	64 (7)
Deepinging Math	Targeted (NY)	1087 (6)	4143 (17)	15 (19)	60 (17)	33 (17)
Project Pathways	Targeted (AZ)	1001 (7)	12415 (6)	100 (8)	166 (5)	88 (5)
TEAM-Math	Targeted (AL)	931 (8)	10139 (7)	27 (15)	92 (9)	68 (6)
GBMP	Targeted (AL)	805 (9)	9969 (8)	43 (10)	63 (16)	46 (12)
Consortium (CAMS)	Targeted (NJ)	789 (10)	8194 (10)	205 (4)	174 (4)	61 (8)
Focus on Math	Targeted (MA)	741 (11)	4441 (15)	42 (11)	72 (14)	38 (14)

**Figure 8. Most Active Projects (Based on Activities from Feb. 05 - March 06)**

Participation by Role: Participation on the site also varies by role. Within the MSP community there are PIs, co-PIs, Math Higher education faculty, Science Higher education faculty, evaluators, teacher leaders, and teachers. The graph below shows percentage of participation for each of these groups.



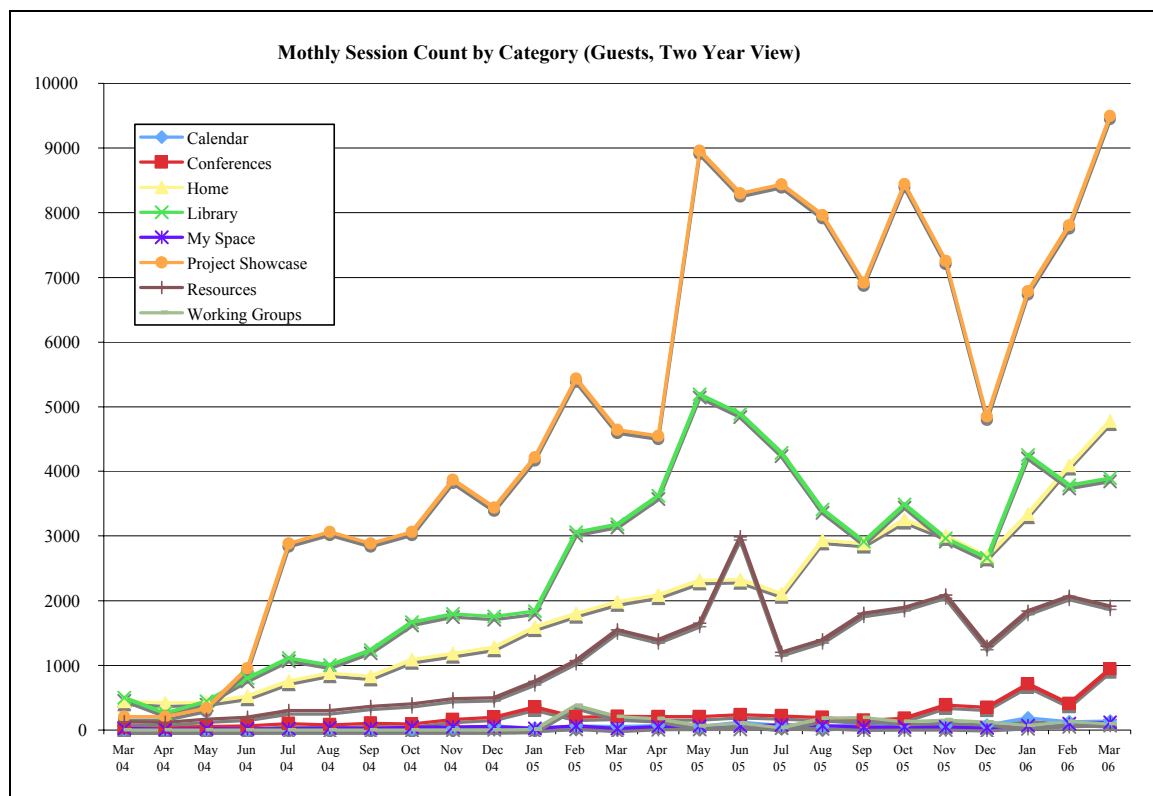
**Figure 9: Percentage of Members Who Have at Least One Session**

As might be expected, participation is the highest for PIs and Project Directors. These people may have been engaged with MSPnet from the very start and have an interest in following news on the site related to all of the MSPs. It is unclear why co-PI engagement in the site is comparatively low at 57.7%. It is possible that some co-PIs represent an institutional affiliation or partnership but their weekly participation in the project is limited. There is also a discrepancy in the involvement of teacher leaders/ teacher professional developers (71.7%) and teachers (51.1%). While several projects added hundreds of teachers to the site, they may not have yet thought sufficiently about how to engage their participation.

## Areas of the Site that Attract Use

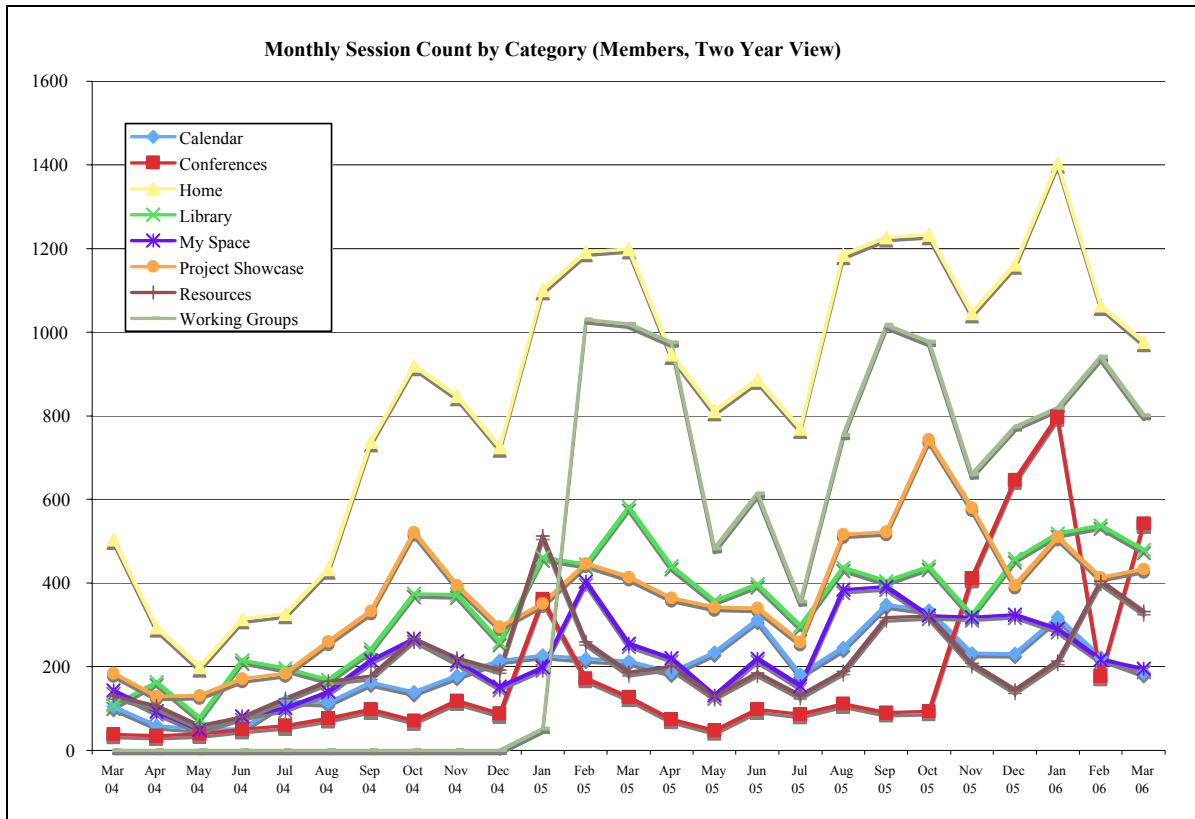
For the public who explore MSPnet, the Project Showcase is the most popular destination followed by MSPnet's Library. Both of these provide information on the program and resources. The public is restricted to a “read only” view of MSPnet and therefore they do not have access to the more interactive areas within the project such as Working Groups and Search and Mail functionalities. The graph below shows where guests visit, by session count. This means that it records where a person visits within a session (session times out after 20 minutes of inactivity). Hence, if the library is visited multiple times within a single session it will be counted only once.

It is interesting to note that Project Showcase and the Library are accessed during a greater number of sessions than is the home page. This suggests that guests are more frequently being directed to the Project Showcase and Library by outside links to these areas (Google, links from other sites, links within e-mails) than from the home page.



**Figure 10: Monthly Guest Session Count by Category (Two Year View)**

By contrast, members interact with many areas of the site, utilizing parts of the site that provide resources as well as those that provide opportunities to communicate and collaborate (Figure 11 below). Unlike guests, members are far more likely to visit the homepage during a session. In January of 2005 MSPnet launched Working Groups, which allows members to form small or large groups that enable the sharing of files, calendar events and threaded discussions. Working Groups can facilitate private collaboration (only invited members can see that the group exists), project-wide collaboration (project members can apply), or site-wide collaboration (any MSPnet member can apply). This new functionality within the site has significantly affected the way members use MSPnet (which can be seen on the graph below). Over the last 12 months it has been visited during more *member* sessions than any other area on the site. Currently there are 215 Working Groups within MSPnet and participants within these groups have shared 2,137 files with each other. These files are all archived on the site and are available as a record to those members who are part of a working group.



**Figure 11: Monthly Member Session Count by Category (Two Year View)**



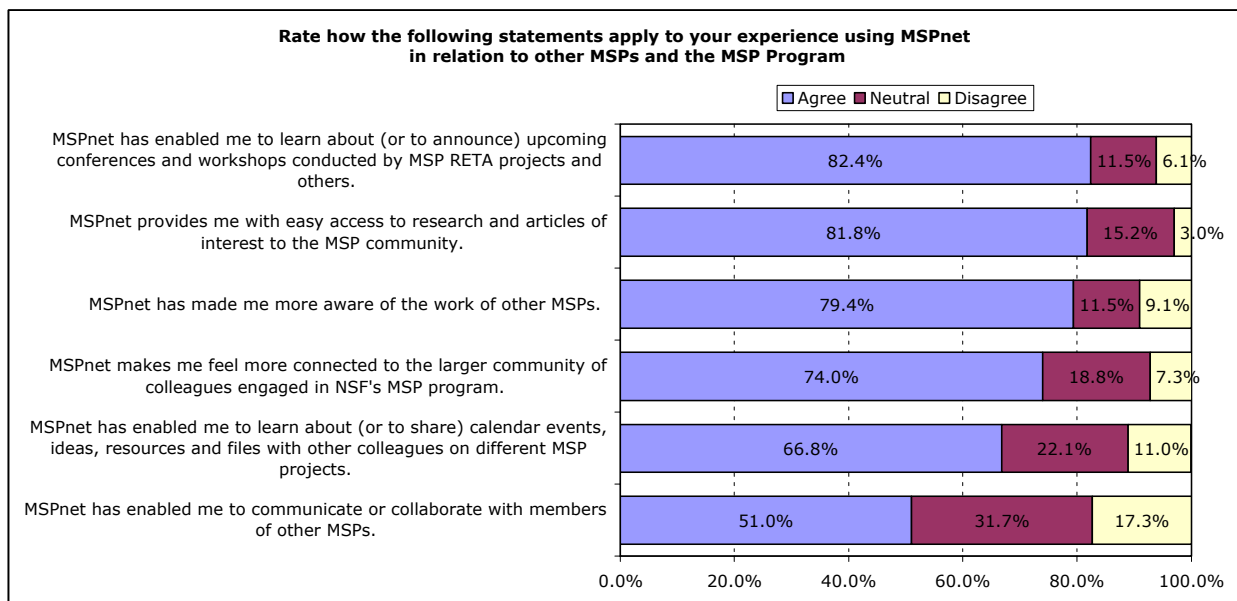
### Assessing the Value of the Site to Members of the Community

In the summer of 06 an online questionnaire was sent to a stratified sample of 300 users (100 high-end MSPnet users, 100 mid users, and 100 low-end users. One hundred sixty five responses were received. Of the 165 responses 72 were received from high users, 52 from mid users, and 43 from low users. Hence the results are somewhat over-representative of more frequent users of the site and should be interpreted with caution.

Overall 83.0% of respondents (N=165) felt the site was very easy or easy to use. 15.8% were neutral, and only 1.2% found the site difficult to use. High end users, in general, rated the site as easier to use than did low users. (Group difference was statistically significant at  $p < 0.05$ ).

Eighty three percent (82.5%) of users found the site to be very informative or informative, 16.4% were neutral, and 1.2% found the site to be hardly or not informative. Also, high end users rated the site as more informative than did low users ( $p < 0.05$ ).

Other survey results revealed that the majority of users ‘strongly agree’ or ‘agree’ with the following statements (Figure 12).



**Figure 12: Members' Experience Using MSPnet in Relation to Other MSPs and the MSP Program**

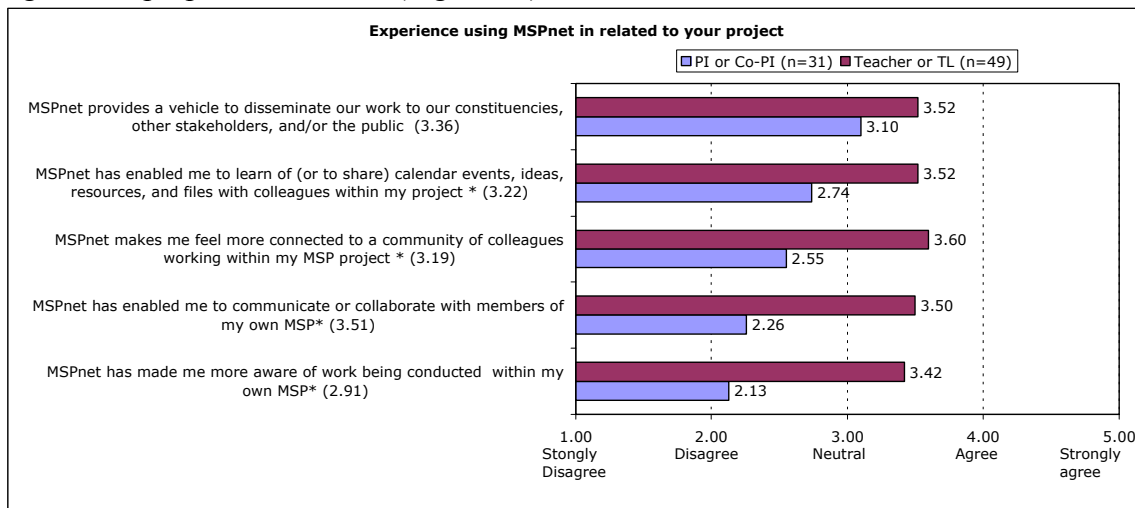
About half of the respondents reported that MSPnet enabled them to collaborate with members of other MSPs. Our experience shows that many users are willing to read, browse, print and share information before they are willing to collaborate online with

other MSPs. Still, 51.0% of respondents agreed with the statement that MSPnet has enabled me to communicate or collaborate with members of other MSPs (31.7% were neutral, and 17.3% disagreed).

Respondents in general were more positive about the value that MSPnet provided to them in relation to the MSP community as a whole, and in being informed about other projects than they were about the value that it provided to them within their community. (This may well be shifting as this data was collected in 07/05 before many groups were making use of Working Groups. We intend to survey again this year.)

While some projects have been early adopters and have made significant use of MSPnet within their projects other projects have not done so. Whereas the level of inter-project communication and services is the same for all members regardless of project, use of project spaces on MSPnet varies greatly.

Even so, the figure below indicate that MSPnet is seen as enhancing project work for a significant proportion of users (Figure 13).



**Figure 13: Members' Experience Using MSPnet in Relation to Their Own MSP**

Ninety-six respondents identified a particular way in which MSPnet has been valuable to their work. In coding their open-ended responses we found that they could be grouped into the following 6 categories:

1. Keeps me informed and up to date on research, articles, and tools emerging in the field.
2. Keeps me connected to events, conferences and work of others in the MSP community.
3. Provides an archive of files and events that are accessible anywhere.
4. Increases collaboration across the MSPs.
5. Increases collaboration within my project.
6. Valuable for dissemination.

We provide some sample quotes representing each category:

**1. Keeps me informed and up to date**

- “It has connected me to various articles and talks that I would not otherwise have known about.”
- “MSPnet has been useful in several ways but access to library resources is wonderful. The articles are pertinent and much easier to access than using a search engine. I appreciate the staffs attention to finding articles and reports related to MSP work. “
- “MSPnet has connected me to articles that I have used not only in our MSP work, but in other projects as well, including a state-funded (Dept of Ed) MSP.”
- “It has provided information of various assessment tools that we have found useful.”
- “It has helped me learn more about the five key features.”
- “I have read more than a dozen articles in the MSP library, which I find to be an excellent resource pertinent to our work.”
- “I often look to MSPnet for research to support or spark my own ideas.”

**2. Keeps me connected to the work of others in the MSP community.**

- “I use the Hub to track MSP-related conferences and activities. It is the main source of information on upcoming events.”
- “MSPnet provides the big picture. It allows a researcher to keep up to date on general MSP activity.”
- “The periodic e-mail that I receive have made me aware of conversations that are ongoing within other MSPs. This has raised my awareness of these issues in our own MSSP and has helped give perspective on the challenges we have faced.”

**3. Provides an archive of files and events that are accessible online.**

- “Easy access to project documents and calendar from any location.”
- “The site allows participants to communicate by updating/posting information. The format allows for everyone working on a project to see the latest version and make changes while avoiding duplication of work. “
- “Information on last years conference.”

**4. Increases collaboration across the MSPs:**

- “I find MSPnet to be an invaluable avenue to communicate with other colleagues in the MSP community.”
- “It has been most valuable in enabling me to connect with staff from other projects (email, discussions, shared readings, etc.)”
- “I have found out about other teachers and what they are doing in their schools.”
- “I have just joined a working group and the messages that have been posted are very useful to me.”

**5. Increases collaboration and communication within my project.**

- “The project calendar has enabled me to stay on top of events within my project. “
- “We are able to use Working Groups to post and archive files available to a select

- audience within our MSP.”
- “It’s been useful to see the different documents that have been created in different activities within our MSP.”

## **6. Valuable for dissemination.**

- “MSPnet has allowed me to advertise our workshops to the entire MSP community.”
- “I very much value the ability to post press releases on MSPnet and am grateful for the opportunity to reach other MSPs and share news. I also appreciate that once PR is posted it is featured as a highlight on the main MSPnet page. “
- “I love the project showcase feature as it allows us to show to other MSPs (and beyond) the work we do. It is nice to also have an external source timestamp the notice....”
- “As a RETA, I have found the search & mailing and calendar features valuable for disseminating information and events that might e useful for the MSPs. “

## Case Study Research

As reported in detail earlier, in Part 1 Activities and Findings, the analysis of three in-depth case studies is currently under way. Each case study involves multiple site visits, document review, analysis of community structure, interview with constituents who are in different sub-communities within the MSP, and the completion of questionnaires. Within the next 6 months we will complete three separate case studies as well as a cross case analysis.

## Next Steps

The number of guest users to MSPnet on increasing exponentially, yet we lack mechanisms to find out who they are, what they are hoping to find, and whether they were satisfied. A pilot guest survey was placed on the site for a period but received a poor response rate. Over the next six months we will consult with our external evaluator consultants, Jim Dorward and Wes Shumar as to how to better gauge the value of MSPnet to the public at large. In addition we will ask an external evaluator to conduct a follow-on online survey with members this year.

We know that the Project Showcase is most highly accessed by guests, yet we are dissatisfied with the work-flow and visual appeal of this section of the site. The fact that this section continues to receive so much traffic, makes it a priority for site revision within the next year.

While we will continue to be responsive to the community in building new end user features as well as new features for administrators to control and customize their space, we will also continue our efforts to provide effective support to projects that may lack skills, techniques, and knowledge for the facilitation on online collaboration.

Our data shows that our members are increasingly aware of the potential of Working Groups. Even those projects with independent websites report that their own Websites do not have the interactive capabilities offered on MSPnet. An increasingly popular use of the site is the sharing of files as well as threaded discussions. Yet our work with the community through workshops and our case study research has revealed that using the site for these purposes requires skills at file organization, and discussion facilitation, which MSP leaders may not have. We have begun to address supporting projects in this regard through administrative workshops, as well as by providing files with increased fields for metadata descriptors. In the coming months we will continue to expand our efforts to support projects experimenting with online collaboration, and online follow-up courses for teachers, through the site.