Evaluation Methods and Findings:
The Field-tested Learning Assessment Guide (FLAG) Website
Final Report

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Introduction

The College Level One (CL-1) team of the National Institute for Science Education (NISE) has as its mission the improvement of teaching and learning in introductory science, mathematics, and engineering courses. In order to achieve this, the CL-1 team has each year: (1) identified key issues (e.g., collaborative learning) considered to be of value to instructors of introductory college-level courses; (2) brought together experts in these areas to synthesize existing research; and (3) created a web site and other products that serve as a resource in these key areas for instructors of introductory college-level courses. The first web site, called "CL," and created in 1997-1998, centered on issues in collaborative learning. The second web site, called "FLAG" and created in 1998-1999, focused on assessment and the third web site, called "LT squared" and created in 1999-2000, dealt with factors surrounding the use of technology in the classroom.¹

Because the CL-1 team was concerned about the perceived value and impact of these products on their target audience, they asked us, the Formative Evaluation team of the NISE, to conduct a study that would determine faculty reactions to, experience in, and use of information in one of their products: the FLAG web site. The evaluation began when FLAG development was close to complete (July, 1999), and revisions and minor improvements were made throughout the FLAG evaluation. We interviewed 49 faculty members from a range of disciplines and institutions about their experience on the FLAG. The evaluation has produced one report that contained detailed information about the participants' experience and suggestions for improving the individual sections of FLAG (Daffinrud and Herrera, 2000). The first report contained a large number of interview excerpts because we wanted the CL-1 team to be able to "hear" first-hand the experience of a sample of faculty users.

This report builds upon the first report by providing a more concise and thematic picture of the participants' experience and use of the FLAG. We synthesized key elements of the first report to answer the CL-1 team's questions regarding impact by providing an overall picture of the participants' estimates of FLAG's value, of their experience overall in the FLAG, and of their reaction to its design. The report has been divided into six major sections: a description of FLAG's purpose and design, an outline of the evaluation methods, and then the findings of the evaluation including: characteristics of the study participants, their assessment of the value of FLAG, their experience on FLAG, and their reactions to FLAG's design. It also contains the interview protocol and survey used in the evaluation.

¹ These web sites are currently available from the CL-1 team web page (http://www.wcer.wisc.edu/nise/cl1)
Description of FLAG

The "Field-tested Learning Assessment Guide" (FLAG) web site was first conceived by Dr. Elaine Seymour and the New Traditions Chemistry Consortium for Curriculum Reform, who envisioned it as a "Michelin guide to assessment" that would provide an web-based indexed list of assessment tools that were field-tested in chemistry classrooms. Dr. Elaine Seymour and Dr. Steven Kosciuk created a prototype version of the web site during 1997-98, when Dr. Seymour was a Fellow with the CL-1 team, with funding by the New Traditions and ChemLinks Chemistry Consortiums. In 1998-99, the CL-1 team, with Dr. Seymour on its editorial board, adopted FLAG as its product for that academic year and made substantial revisions to the site, with the main purpose of broadening the focus from chemistry to a range of science, mathematics, and engineering disciplines. The CL-1 team believed that the FLAG was unique in its approach of providing a one-stop shop for assessment and for its focus on a generalized science audience, rather than discipline-specific or organization-specific audience.

Purpose of FLAG

The FLAG web site philosophy on assessment emphasized four key ideas that were embedded throughout the FLAG. These ideas were:

- Instructors should use a Goals-Strategies-Outcomes (GSO) model by:
  - defining clear and achievable Goals for their students
  - using appropriate Strategies to help their students achieve these goals
  - using appropriate tools to measure the Outcomes (degree of achievement of goals)
- Good teaching involves engaging students in the learning process
- Assessment can be used summatively (to measure student learning) and formatively (to improve student learning)
- Assessment is a key component to students' learning because students regard assessments (especially when graded) as the indicator of what the instructor really wants them to know and do

As they restructured FLAG, the CL-1 team identified their target audience to be instructors of introductory college-level SMET courses who were interested in incorporating new types of assessments in their course. They believed that the web site could not convert any faculty member to FLAG's particular philosophy; it could instead serve as a resource for the interested faculty member to learn more about assessment in general and to gain access to assessment tools and techniques. We, the evaluators, labeled this group of faculty with an interest in learning about and possibly adapting these types of assessments as "reform-receptive." FLAG was designed to serve reform-receptive faculty with a range of experience, providing an introduction to assessment and assessment techniques to those new to this area and a range of tools for those with more experience.

The CL1 team believed that reform-receptive SMET faculty would be more likely to adapt new assessments into their teaching practice if descriptions of these strategies were already "field-tested" in classes like theirs and written by and for people like themselves (i.e., college-level faculty). These two assumptions provided the framework for the selection and design of the centerpiece of the web site, the Classroom Assessment Techniques (CATs). The CATs, based on the model developed by Thomas Angelo and Pat Cross, are self-instructional modules that describe how to implement an assessment technique into a SMET classroom (Angelo and Cross, 1993). To ensure that the assessment techniques were "field-tested," the CL1 team selected classroom assessment techniques whose successful use had been documented in a peer-reviewed journal. Once identified, the CL-1 team contracted a faculty user of the technique -- often the author of the article -- to write a self-instructional module that described how to implement the assessment technique in a classroom. They required that the CATs be written in clear, jargon-free language and provide a complete, honest, "nuts and bolts" description of techniques that includes a variety of examples.
The team selected a range of assessment techniques that emphasized and assessed a variety of goals for the student, from written and oral communication (Weekly Reports, Portfolios, Interviews), to skill in the subject area (Performance Assessment), to attitudes toward learning and science (Attitude Surveys, Student Assessment of Learning Gains or SALG), and finally to areas of science understanding (ConcepTests, Concept Mapping, and Conceptual Diagnostic Tests). These CATs also provided strategies to help faculty communicate goals (Scoring Rubrics), to obtain quick feedback on their students' understanding of the content (e.g. ConcepTests), and to gauge student reactions to the course overall (SALG).

Design of the FLAG
The first page of the FLAG (see Figure 1) illustrates its five major sections and some of the navigation features of the web site. In addition to these sections, this front page also links to a list of the FLAG editorial board, links to an acknowledgment to the work of Drs. Seymour and Kosciuk for their development of the first version of the FLAG, and links to a "new item" called the Student Assessment of Learning Gains web site, that has recently been added to the FLAG as a CAT.

The five sections that appear at the bottom of the screen were designed to be navigated from "left to right." The purpose of each section, their contents, and identifying icon, is listed below.

Getting Started
Purpose: Introduce reader to assessment
Contents: Four pages. Each describes a different aspect of assessment and is designed to be read linearly.
Identifying Icon: Running girl

Matching Goals to CATs
Purpose: Match user-selected goals with appropriate CATs
Contents: Three pages. An introduction to the section with directions, a table that lists 50 goals for student learning in one column and the CATs in a top row with Xs were the CAT is aligned with a goal, and an output page which lists the CATs that are aligned with the user-selected goals.
Identifying Icon: Hockey goalie

CATs
Purpose: Introduce the Classroom Assessment Techniques
Contents: Many pages. An introductory page, which then links to 10 CATs, each of which consists of 6 pages. The CATs on the site are: Attitude Survey, ConcepTest, Concept Mapping, Conceptual Diagnostic Tests, Interviews, Performance Assessment, Portfolios, Scoring Rubrics, Student Assessment of Learning Gains², and Weekly Reports. The first page of each CAT has a picture of the author and a quote about his/her use of that technique, a quick description of the CAT and its purpose, and a table listing various aspects of the CAT implementation, such as time involved in preparing, class size, etc. The remaining pages of the CATs provide detail about how to implement the CAT in the classroom, including examples of the technique, step-by-step instructions, pros and cons of use, and additional resources.

² Did not appear as a CAT when evaluation data reported here was collected. Did, however, appear as a "new item" on the front page of the FLAG.

Figure 1: First page of the FLAG
Searchable Tools
Purpose: Give tools (e.g., an actual concept map) of the Classroom Assessment Techniques
Contents: Four pages. An introduction to the section, a list of "tools" or examples of techniques ordered by discipline, a list of tools ordered by the Classroom Assessment Techniques, and search engine in which users can search for tools by technique, discipline, or goal. It is important to note that at the time of the evaluation, there were very few (12 or so) tools in this section and most that appeared were the examples presented in the CATs themselves.

Resources
Purpose: Provide additional resources on assessment
Contents: Five pages. An introductory page, a list of other web sites on assessment, a list of experts on assessment organized by state, an annotated bibliography of assessment books, and on-line articles on assessment.

The FLAG has a few design characteristics that are relevant to the evaluation. First, the design is intended to promote linear use of the web site. Note that no description of the FLAG appears on the front page, and the "Getting Started" icon and descriptive text implies that this is the section that one should visit first. When the user finishes reading that section, the navigation buttons take her to the next section, "Matching Goals to CATs," and then on to later sections. Each section of the site is heavily text-oriented and is intended to offer information in a linear, book-like fashion. Second, the site does not allow users to provide comments to a general audience or to interact with one another. Users can email the web developer with questions and comments, or offer a tool to the FLAG, but this interaction is invisible to other users of the FLAG web site. Thus, the information on the FLAG is generally unidirectional: users can read and review information on the site, but cannot provide any of their own or participate in any conversation with other users.
Methods of the Evaluation

Our evaluation, conducted from July 1999 through June 2000, had both formative and summative components. The formative aspects revolved around improving the design and content of the FLAG site, and ways to better reach reform-receptive faculty for dissemination of FLAG. Many of the results of the formative aspect of the evaluation appear in the first report (Daffinrud and Herrera, 2000). The summative question of the evaluation was, "What impact does the FLAG have on its target audience?" This question was divided into four parts: (1) Does the FLAG fill a need? (2) How does its target audience experience the FLAG? (3) What do they gain from their experience on the site? And finally, (4) Do they adopt or adopt any of the assessment techniques into their classes? It is these questions that this report seeks to answer.

Various constraints shaped the methods chosen for this evaluation. Some pertained to the circumstances surrounding the development of the FLAG web site; others pertained to the evaluation of web sites in general.

- **Reaction of target users to FLAG was largely unknown.** Unlike programs or workshops in which the organizers can get at least an anecdotal picture of their participants' reactions by simply observing them, web sites do not provide their developers the same benefit. FLAG was reviewed by its editorial board and created by faculty, but no observation of general faculty use was made during development. This meant that the evaluation needed to have a formative component that gave the developers some feedback from a sample in their target audience who had no prior knowledge of the FLAG.

- **FLAG was new and thus not widely known.** The FLAG web site was unveiled in June 1999 and so was known to few people at the time of the evaluation, which started in July of that same year. Thus, we could not assume that the average faculty interested in assessment had heard of the FLAG and needed to invite faculty to visit the FLAG as part of the evaluation. This meant that we could not, at least immediately, measure the degree to which participants adopted and used the assessment methods in their classes since many were already teaching a course and would be reluctant to incorporate a change in the middle of a semester.

- **FLAG was (and is still) a work-in-progress.** The FLAG was lacking -- and still is -- one thing that its creators anticipated that faculty valued most: downloadable tools that could be easily modified for quick use in the classroom. Thus, the participants we interviewed needed to review the site for what it was and also for what it would eventually become.

- **The target users were not easy to characterize.** The target audience had two primary characteristics. First, they taught introductory math, science, and engineering courses at post-secondary institution and so were distributed across the country. Second, they were interested in learning about new assessment methods, particularly those similar to the philosophy of FLAG. Since faculty learn about these types of things from variety of places (and primarily from word-of-mouth sources), identifying this "interest" could prove difficult.

- **The notion of impact was vague.** The FLAG could have multiple levels and types of impact: learning about assessment, changing a teaching philosophy or style, modifying an existing assessment practice, or adding a new assessment practice. It could also involve telling others about the web site, or "bookmarking" the site for future use.

In light of this set of constraints, we chose heavily qualitative methods, sampling from an audience of faculty likely to be reform-receptive. We first identified discipline-specific workshops or programs that emphasized a philosophy similar to FLAG and acquired names of participants. From these lists, we selected participants by discipline and the type of institution at which they taught. A list of the programs used appears in Table 1 below and the breakdown of the institution type and discipline of instructors...
appears in Table below.

**Table 1: Instructor participants selected from discipline-specific organizations**

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>Workshop Biology, BioQUEST</td>
</tr>
<tr>
<td>Chemistry</td>
<td>New Traditions workshops, MC² and ChemLinks workshops</td>
</tr>
<tr>
<td>Engineering</td>
<td>The Engineering Coalitions, Engineering Education Scholars Program</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Project NExT, Project CLUME</td>
</tr>
<tr>
<td>Physics</td>
<td>Workshop Physics, &quot;word of mouth&quot; references</td>
</tr>
</tbody>
</table>

**Table 2: Breakdown of instructor participants by discipline and Carnegie classification**

<table>
<thead>
<tr>
<th></th>
<th>Associate of Arts</th>
<th>Baccalaureate</th>
<th>Masters</th>
<th>Doctoral</th>
<th>Research</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Chemistry</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Engineering</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Math</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Physics</td>
<td>2</td>
<td>2</td>
<td>11</td>
<td>13</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>9</td>
<td>11</td>
<td>13</td>
<td>9</td>
<td>49</td>
</tr>
</tbody>
</table>

We both emailed and telephoned each person in the sample, asking them to participate in the evaluation by browsing the FLAG for ½ hour and talking for another ½ hour about their experience. We informed them that we were looking for feedback on what was useful, and what was not so useful, to them as instructors of introductory science courses. Most of the faculty whom we contacted agreed to participate; those who did not cited time as the principal reason, and were replaced by another faculty member who filled a similar place in our sample design. We conducted these structured, open-ended interviews from October of 1999 through January of 2000. Many of the interviews lasted longer than the suggested ½ hour, and often took about 45 minutes. These interviews were transcribed and coded for themes using the NVivo software program created by Qualitative Solutions & Research Pty. Ltd.

We chose to use interviews principally because we were not certain how faculty would respond to and experience the FLAG web site and the ways, if any, they would use the web site in their teaching. In this sense, the evaluation itself was exploratory, and the interviews provided a way to obtain a rich, detailed description of the participants' teaching background and style, of their reactions to the site, and of their anticipated use of the FLAG. We used a protocol (see Appendix A), but generally followed the lead of the participant as he discussed the FLAG. The participants took generally two approaches to their reviews of the FLAG: some reviewed it with respect to their needs and future use in their classroom; others, generally those with considerable experience with the content of the FLAG site, reviewed the site insofar as it would be useful to other faculty.

In order to get "impact" data, we conducted a follow-up email survey in May, presumably at the end of the teaching semester, to determine the ways in which the participants had used the FLAG. This short survey appears in Appendix B. Forty-one of the 49 participants responded, for a response rate of 84%.
Evaluation Findings: The Degree to which Participants were in the Target Audience

Our strategy for finding the study participants did not guarantee that they were in the target audience of the FLAG. First, did they teach introductory classes? Second, did they use the web and if so, could they use the web well enough to use the information on FLAG? Finally, were they actually reform-receptive? The answer to each of these questions was "Yes," as the sections below indicate.

Teaching experience
All but one of the instructors regularly taught introductory classes within their discipline. Three of the 49 reported having roles in their department that involved some area of assessment and a few had education degrees in their field rather than strictly science degrees. The participants cited a wide range of teaching experience, with a few having taught only two years as a professor to a one mathematician having taught for 37 years. Forty-one percent of the participants had taught for less than ten years.

Use of web and FLAG
Many (60%) of the participants reported using the web at least a few times a week and all had used the web at least once prior to the evaluation. A small number (9) of the participants said that they actively surfed the web for information on teaching and assessment, although many said that they would visit sites that came to them via email.

When asked about their comfort in using the web, all said that they were fairly comfortable navigating web sites. During the interview, participants "walked through" the FLAG, which provided some indication as to their actual comfort level on the site and on the web. Most participants were able to navigate the FLAG site and the web in general with relative ease, as indicated by their ability to identify hyperlinks, their use of the "back" button in their browser, and a general awareness of where they were on the site. Despite this level of experience, many participants had some difficulty with navigation, although much of this subsided after they got a feel for the site. These difficulties (see "Evaluation Findings: Participants' reaction to FLAG's design" for more) do indicate that designers should assume only a minimal level of web competency of their target audience.

Reform-readiness
To some degree, the participants' level of reform-receptiveness was evident in their agreement to participate in the evaluation and in the fact that most spent more than the requested time looking at the FLAG in preparation for the interview. In their interviews, many participants: (1) described a teaching practice that at least valued actively engaging students in the classroom experience; (2) stated an interest in assessment, either out of a personal desire to improve their teaching or out of departmental or accreditation pressures (see "Does FLAG fill a need"); and, (3) cited a desire to learn about new teaching/assessment ideas. These three factors combined to indicate that most of these participants were, in fact, reform ready. In this section, we describe the participants' comments regarding their teaching and their interest in learning about new assessment/teaching ideas.

Almost all of the instructors were able to articulate their teaching goals, strategies, and role for their introductory classes, which suggested that they have given some thought to their teaching. We used a taxonomy created by Dr. David Kember to categorize the participants' teaching practice (1997). This five-point system was developed from a meta-analysis that Kember conducted on studies of faculty

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3 One participant did not teach: she was an administrator in the engineering department who assisted the faculty in better use of assessments.
4 This was not asked of interviewees. This information was volunteered by the participant.
teaching practice within the classroom. It posits a continuum of styles, with one end extremely "teacher-centered" and the other extremely "student-centered."

Table below describes this schema.

<table>
<thead>
<tr>
<th>Table 3: Kember's categorization scheme of faculty conceptions of their role in teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imparting Knowledge</td>
</tr>
<tr>
<td>&quot;The most teacher-centered conception views teaching as purely presenting information.&quot; Emphasis is on imparting information, with no real emphasis on tailoring for the student audience.</td>
</tr>
<tr>
<td>Transmitting structured knowledge</td>
</tr>
<tr>
<td>&quot;For this conception the student is at best recognized as a passive receiver.&quot; &quot;...the conception focuses upon transmitting knowledge but recognizes that if the knowledge is to be taught it needs to be presented clearly.&quot; The emphasis is on teaching concepts.</td>
</tr>
<tr>
<td>Student-Teacher Interaction</td>
</tr>
<tr>
<td>&quot;This intermediate conception is characterized by a recognition that interaction between teacher and student is important.&quot; There is a greater stress on learning activities, such as experiments or problem solving, as the student needs to learn how to master the topic. The emphasis is on motivating the students.</td>
</tr>
<tr>
<td>Facilitating Understanding</td>
</tr>
<tr>
<td>&quot;This conception, consistent with student-centered/learning beliefs, emphasizes facilitating the development of understanding or conceptions of knowledge, in other words, facilitating understanding.&quot;</td>
</tr>
<tr>
<td>Conceptual Change/Intellectual Development</td>
</tr>
<tr>
<td>Conceptual change envisages a holistic developmental process resulting from the establishment of relationships between teachers and students. Intellectual development is achieved by confronting students with their preconceived ideas about a subject.</td>
</tr>
</tbody>
</table>

As Figure 2 below indicates, most of the participants of our evaluation sample were in the right three categories, with more than 70% citing goals, strategies and roles that indicated an emphasis on students' active involvement in the classroom. Thus, these participants did recognize the role of the student in the learning process and so would be amenable to a principal part of FLAG's philosophy (see "Purpose of FLAG"). In this sense, they were reform-ready.

Figure 2: Breakdown of participants by Kember category in terms of goals, strategies, and role

The following excerpt provides an example of the types of goals and strategies that the
participants used in their introductory classrooms.

...that they like science and recognize its relevance in the world around them. I want them to be able to read newspaper articles and magazine articles that are science-related and to be able to understand what they are reading. To be able to apply the biological concepts they are learning to current articles and issues. ...I want to create a community for my students that is a good learning community within my class, and you know, I want try and have a good instructor-student relationship. [Biology instructor, Associate of Arts institution]

Most of the participants professed an interest in learning about new assessment and/or teaching techniques. They used a range of methods to learn about innovations, as seen in Table below. This interest, especially when combined with belief that students should be actively involved in the classroom, indicates a strong degree of reform-readiness.

<table>
<thead>
<tr>
<th>Table 4: Ways that participants learn about new teaching ideas (N=49)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attending to meetings and/or conferences</td>
</tr>
<tr>
<td>Being a member of a professional associations</td>
</tr>
<tr>
<td>Talking to colleagues</td>
</tr>
<tr>
<td>Reading journals in field or in education</td>
</tr>
<tr>
<td>Attending workshops that focused on education in field</td>
</tr>
<tr>
<td>Searching the web and/or being subscribed to a list-serv</td>
</tr>
<tr>
<td>Reading books</td>
</tr>
<tr>
<td>Bulletin boards and flyers</td>
</tr>
</tbody>
</table>

For more information on the specific ways that these participants obtained information on new teaching techniques, please see the first formative feedback report.
Evaluation Findings: Participants' Estimates of FLAG's Value

Most of the participants felt that FLAG provided a valuable, unique, and needed resource especially for instructors new to teaching and assessment. Many indicated that the web site would much more value to a larger audience when it had a number of easily downloadable tools. Only two participants gave FLAG strongly negative ratings: one felt that learning was too complex for assessment to properly measure and felt the site could mislead its audience, and the other said that the site offered more pedagogical techniques than actual assessments and so was of limited use.

In this section, we outline the participants’ comments regarding the degree to which the FLAG fills a need, whether and why it has value, and the impact of the FLAG on their teaching.

Does FLAG fill a need?

Many of the participants said an assessment resource like FLAG did indeed fulfill an existing need for them and for their colleagues. They were interested in learning about new assessment methods and/or gaining access to existing tools, either out of personal interest or because of external pressure from their department, institution, and/or accreditation board. A significant subset of the participants also said that their colleges and departments were heading toward more outcomes-based education that needed to properly assess student achievement. Below is a range of interview excerpts, generally in response to a question soliciting their overall reaction to the FLAG web site.

Well, this issue of how to make effective use of assessment is something that's constantly on my mind. I see assessment as integral to the process of teaching and learning. I know there are lots of ideas out there that I haven't tried or that I may not have tried in an effective way. For example, it's been awhile since I've tried using portfolios, and I want to go back to that and try it again with, ah, with help from people who have been there. 'Cause I wasn't real satisfied with the way I did it the first time around. [Math instructor, Research institution]

[My reaction to the FLAG] was pretty positive. It looked like something that would be very useful for us; from the standpoint of particularly in this natural science course, we are pretty much guaranteed that there will be no exams and so we are actively looking for different kinds of activities and assessments that we can use and so that it has such a varied group is very useful to us. [Chemistry instructor, Doctoral institution]

And in all my physics classes I require them to do homework and turn it in, and as a rule, homework is about half the credit. And I sort of feel straight jacketed because I want them to do the work, but that normally means my grading load is very large. And I’m sort of hoping out of the CATs that are available here, I will get some ideas, maybe some very active ideas on alternative assessments. [Physics instructor, Associate of Arts institution]

The other thing that is very useful is [that] I happen to be chair of the faculty here at [my university department] and we have a committee that is involved with assessment and this is one of our big issues right now you know assessing our courses and evaluating things. And I see this as a very useful tool for the whole, not necessarily just in the sciences I think it is probably a very useful tool that I’m certainly going to alert my colleagues … [Biology instructor, Baccalaureate institution]

I mean I can probably talk for about 99% of engineering professors five years ago. Not many people bothered about assessment at all, we just went to the class, taught whatever we were teaching, and at the end gave the exam [and] students passed or failed and that was the end of it, basically. But since the university started this new criteria [ABET] where assessment becomes one of the items that they
will look at carefully, we are sort of whether we like it or not pushed into this direction. [Engineering instructor, Master's institution]

And how does it do this?
The participants identified key features of the FLAG that made it a valuable or potentially valuable resource for them. They saw value in FLAG's targeting of the higher education community, in its plan on being a complete resource on assessment, in the fact that it was easily accessible, in its emphasis on field-testing, and finally in its honest and concrete descriptions of assessment techniques.

Value in targeting the higher education community
The participants said that there was tremendous value in FLAG's attempt to provide a resource on assessment geared toward the higher education community. Those who had actively searched the web for assessment resources geared for the college-level instructors said that those searches had largely been unsuccessful. They said they often came across discipline-specific sites or sites geared for the K-12 community and were thankful to learn about a site geared for their needs. They felt that FLAG was unique in its approach. As one participant said,

And what I am excited about is this is something from the university level. You see, I've been learning so much from K-12. So this represents to me a major step forward and a major resource for my professional development, like with Project CLUME. Gosh, finally there's something where I'm with people whose students are like mine. [Mathematics instructor, Doctoral institution]

The fact that the CATs were written by instructors like them was motivational for some of the participants, especially those new to assessment or teaching. Reading about other faculty using these techniques inspired these participants to think about using them in their classrooms because they actually had a "proof of concept" that there were techniques that were applicable to their particular classroom situation and that other faculty had an interest in and had used these techniques. This was particularly important because many of the faculty were the only, or one of a few, faculty in their department to have an interest in adopting new teaching techniques.

What [FLAG] is telling me is that there is certainly a tool out there, a general tool or set of strategies that are very accessible to me and I think before I wasn't convinced that somebody hasn't had a lot of education or education courses or really dedicated their life to really studying how people learn or what they learn could really use any of these things. And now, you know, I think, "Hey, these are things that some of my colleagues have developed and are using. So it's pretty obvious they are accessible." [Biology instructor, Baccalaureate institution]

Value in providing a complete resource on assessment
The participants also appreciated FLAG's intention of providing a complete resource on assessment, from the "whys" to the "hows." They liked the idea that someone else had done the time-intensive work of searching the large amounts of information and distilling the major ideas and techniques in assessment into one location.

It was interesting that there was something like that being developed. I was intrigued by some of the information that was presented there. I'm not aware of anything else like that, that's available on the web, and in some sense what part of me said, "Well, you know this stuff is out there, but here's basically a place to go that provides a tutorial on assessment, provides a summary of what's out there, and then allows someone to actually pull out some materials -- once you build up the library [of tools]." And otherwise if you didn't do that, the only way to get that stuff is to go dig into the literature somehow, or contact people who you may not know who to contact, and the average instructor is never going to do that. They're never going to go looking into the literature and go
calling people because they don’t know the right questions to ask, they don’t know the right people to go to, and what happens is the activation barrier for that is just too high, and there’s other stuff that they could be doing with their time. [Chemistry instructor, Doctoral institution]

Many of the participants appreciated the emphasis throughout FLAG on the "whys": the importance of assessment in the classroom, the importance of stating goals, and the importance of aligning assessment strategies with those goals.

I really liked the Getting Started section. I think you did a really – or they, whoever – did a really good job of setting up the web site in the way you would set up a classroom in the sense of, "Okay, this is why we’re doing this. Here are our goals. We’re going to do it now and then we’re going to reiterate what we’ve done." I think that was really well set up. I think it's all very well-written and clearly describes kind of an assessment-driven approach to teaching. A goal-based approach. I think it does that very well. [Chemistry instructor, Baccalaureate institution]

Most participants said that the items of most value to them were practical things they could modify for use in their classroom. With respect to the FLAG, the most usable sections were those that described the CATs and gave links to the tools. For most participants, the CATs were the most valuable part of the FLAG in that they were the most directly transferable items on the web site. Most of those who did not find tools for use in their class said that this lack of tools made the site of limited immediate practical value to their teaching. They liked to learn about techniques, but still needed to create their own assessment instruments, which took time they often didn't have.

It's definitely useful for folks who are already interested in making changes to their classes. What I found sort of unfortunate -- but it's true -- is that faculty members are really pressed for time, and they want something quick and easy that they can implement right now -- without any effort -- and I'm not sure it's structured really well to do that, you know. If you start collecting this body of different assessment instruments, then it might be useful. [Physics instructor, Research institution]

[The Searchable Tools section] really disappointed me. Because it didn’t have much at all, and that’s where I wanted the most. I was really excited about this web page because I thought it would give me lots of different assessment tools that people from all over the country use, and I was really excited, but instead of giving me details, it gave me a general picture, which I really appreciate, but I guess maybe since I’m already bought in to a lot of these ideas, I wanted to steal stuff, and I wasn’t able to do that. [Chemistry instructor, Baccalaureate institution]

Value in its accessibility
The participants valued that FLAG was a web-based resource since this characteristic enabled them quick access to a variety of assessment techniques and references. Many of the participants with experience in assessment said that the information on FLAG was not "new," but it had tremendous value because it was now easily accessible to the average instructor who had little time to search out teaching resources. These participants said that although faculty may be interested in improving their teaching, they had other priorities and could not (and would not) spend the time to browse

I mean now my biggest problem is -- I mean I don’t have a lot of time too. I do education but I’m not a person who is dedicated to education fully like some of the other colleagues that have more time. I’m involved in research. So this [FLAG] is very convenient. So the best thing about this program is that it is very convenient for me. So I can go and look quickly at what is important and be able to get the particular technique that is going to be useful and I know that people have applied it so I won’t be taking as big of a risk. You see the convenience of it is what’s most important to me, what’s most appealing right now. [Engineering instructor, Master’s institution]
Yeah, I’m going to spend some time now that I have a little time kind of looking at this and I guess the beauty of this is when you tell other people and even your colleagues that are interested in the same things you can all try out different things. You have really easy access to the same tools. I can just say, “Here’s the site -- why don’t you work with interviews a little bit and I will work this other one and we will compare notes.” So I think there could be a lot of colleagues sharing here. [Biology instructor, Baccalaureate institution]

Many participants also valued the fact that FLAG enabled them to customize the site to fit their own needs, especially when using the interactive "Matching Goals to CATs" section.

Well I like it. What I saw of it I like. It’s very organized, very systematic, it’s user friendly, it works with you in terms of what your priorities are and gives you suggestions about how you can achieve your goals, gets you to clarify your goals. [Chemistry instructor, Associate of Arts institution]

I think the introduction is nice and the rest of the site is well structured in that it guides you along and once you’ve got your objectives in mind, it then points you to the classroom assessment techniques that are appropriate for that. [Engineering instructor, Doctoral institution]

Value in its "field-testedness"
The participants valued the "field-testedness" of the classroom assessment techniques and tools. For most, the fact that a particular technique or tool had been used in a colleague’s classroom was extremely important because it provided a concrete picture of the benefits and drawbacks of that technique. This is apparent in the quotes below.

[It is important to me to see the actual student results] just to see how successful others were in it. Yeah. To see how successful others were in it and in which courses. I mean, we are talking about a finite number of courses that engineers teach. So if I can see that people taught a common course and used a certain style and they liked it, I mean that is very valuable to me. … It can guide me in the direction that is likely to be successful. [Engineering instructor, Master’s institution]

… I thought it was great. Reading why the people did things and what they thought they were getting out of it in class and I guess the personal descriptions of what we are doing and what we are going to accomplish, I thought that was wonderful. [Engineering instructor, Research institution]

I like the way that there’s actually a person talking about how they use it. There are little briefs on what it is and why you’d use it, and what’s involved, and then the ability to explore it more, in other words you give examples of the limitations and you can download the information if you wanted to actually use it. So I think those are set up well for people to be able to use them pretty easily. [Chemistry instructor, Doctoral institution]

In addition to the experience of the CAT author, the participants valued any references that would also provide some information on the degree to which the technique had been field-tested and the success of that testing.

Participants also said that the field-testedness of the techniques would be helpful when dealing with skeptical peers. Many of the participants said that they were alone or in a small minority in using innovative teaching techniques in their classroom, and it was helpful to have information on the success of a technique when conversations about curriculum arose with colleagues.

It’s well done, and it’s really nice to have the references because that’s one of the first things that
some of the people who are sometimes less supportive ask, and we all should ask, "On what basis do you feel that this is a good tool?" [Mathematics instructor, Associate of Arts institution]

That’s always the question people ask, "Are these new techniques that you are doing -- Are they any better than what we’re doing now? Which is a whole lot easier -- and I’m comfortable with it, I know how to do it. So why should I change if it’s not any better? So you’ve got to demonstrate to me that learning that is going to be a whole lot better, for me to put in the effort to change.” [Biology instructor, Master's institution]

Value in its realistic approach to doing assessment
The interviews revealed that the participants wanted the CATs to provide an honest, detailed picture of the assessment technique that contained many examples and references. Many participants emphasized the importance of having a pros-and-cons section and limitations section, so that they could get a balanced view of the benefits and drawbacks of a particular classroom assessment technique. With this information, they could then decide whether to use a technique in their classroom.

R: It [FLAG] looks at all of these different particular assessment techniques and tells you about the pros and cons. What can you get out of this? What do you not get out of this? How much time does it take to do this? And who is actually doing this? And what sort of concrete tools are available. How difficult is it going to be to adapt it without being judgmental: "Oh, this is really great!" and "This stinks!"?

I: And you like that?

R: I like that, yeah. I think it is good for people not to be too influenced at the very beginning now. They will rapidly decide whether they think it is really effective for them or not. [Physics instructor, Baccalaureate institution]

All the participants said that the language in the CATs was clear and understandable to them, and said that this was due in part to its authorship by someone in a science field, who could put "education speak" into plain English for them. A few disliked the use of acronyms, such as CAT and FLAG.

I do like your non-use of heavily oriented education terms. I appreciate the clear language. In other words, I've worked with enough of our College of Education people now and read enough to know that you get into the educational research, I mean, I have no idea [off] the lingo. You know, but this is written without that lingo, and I appreciate that. [Engineering instructor, Research institution]

I just wanted to mention that this is one of the very high quality materials that I have seen in the area of assessment. Particularly for a group of users like us who are essentially laymen in the area of assessment. Either we see material that we hardly understand or we see material that is almost trivial. Here at least I see materials which have some depth but also are understandable. So it is very well done. [Engineering instructor, Master's institution]

Who is FLAG most useful for?
Most participants volunteered feedback regarding the most appropriate audience for the FLAG. Many felt that the site could not by itself convince a new faculty member to adopt the FLAG's philosophy on assessment and said that FLAG was "preaching to the choir" since only those faculty with an interest in assessment practice would visit or stay at the site. These comments were made primarily in reference to the Getting Started section: participants commented that this section treaded a fine line, trying to convince faculty of the value of assessment without putting them on the defensive. One participant cited an example:
R: So, one of the first sentences [in the Getting Started section] was, "Traditional testing methods have been a limited measure of student learning and equally importantly, of limited value for guiding student learning." Most faculty would not accept that premise.

I: And why is that?

R: I understand what it's talking about, but I think a lot of people would look at that and say, "What do you mean my tests don't test student learning?" So they're not going to start out accepting that.

I: So what would you suggest, to take it out?

R: Well, it's an important point to make, and you're kind of preaching to the converted in that statement. It would be nice to say it in a way – an alternative is something like, when some alternative assessments are used, people have discovered that students aren't learning what they think they're learning. If there were some way of giving an example of that, that kind of drives home the point, then that might be more useful than just that statement. People who accept the statement won't be bothered by it and can go on, and the others will read it and say, "Well so what?" So, I'm not quite sure how to get around that in the website, but I just wanted to point that out. [Chemistry instructor, Doctoral institution]

Many of the participants felt that the FLAG website was primarily useful for instructors fairly new and receptive to these types of assessment strategies. Most of those participants with experience in assessment viewed the FLAG as very useful as an introduction to assessment and to various assessment methods. However, they felt that FLAG was missing the critical "next stage" elements – instruments they could use in their classroom. The following two participants reflected on this point:

I mean I sort of see it as a resource for people who don’t have the information about these assessment tools. I don’t necessarily see it as a resource for people who already understand how to use these assessment tools. [Physics instructor, Research institution]

I think the site is perfect for someone who doesn’t use [assessment in this way]. What is there is valuable, because all of this stuff I use, and I know it works. Yeah, I think everyone should be using it. … It’s at a good starting point for someone who has no information on this or who hasn’t used it, it’s a good starting point, but I do believe that for those of us that do, we just need to go to the next level. [Chemistry instructor, Associate of Arts institution]

Those who considered themselves to be novices in assessment also felt that the site was a good introduction to assessment ideas and methods. Like the "experts," they too wanted examples to use in their class, but also appreciated the information on the FLAG as an introduction to new ideas.

I would say maybe I am a well-informed novice and it was fine for me. I think there is enough information that if you don’t know what is going on, it explains it to you. If you know what is going on, you may already have your own favorite places and that. [Chemistry instructor, Doctoral institution]

I’m kind of excited about this web site because it seems to be a very general approach to what an assessment is. And I’m sort of hoping that it’s going to help me do something that if I value a type of learning, it’s going to help me find a way to give the students goals, and then test for it. [Physics instructor, Associate of Arts institution]
What is FLAG's impact on participants?
We looked at the impact of FLAG on its participants in three ways: their gains in knowledge in assessment; their intended use of the FLAG, and their actual use of the FLAG six months following the interview.

Gains
Since the interviews were exploratory in nature, we cannot provide a numerical count of gains made by the participants; however, we can list the types of gains that the participants reported making in their understanding of assessment. These gains are listed in Table 5 below.

<table>
<thead>
<tr>
<th>Table 5: Participant gains from sections of the FLAG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Getting Started</td>
</tr>
<tr>
<td>Learned Bloom's taxonomy</td>
</tr>
<tr>
<td>Reinforced big picture of assessment</td>
</tr>
<tr>
<td>Knowledge of future resource on assessment</td>
</tr>
<tr>
<td>Matching Goals to CATs</td>
</tr>
<tr>
<td>Learned/reinforced value of goals in course design</td>
</tr>
<tr>
<td>Learned/reinforced need to align assessments with goals</td>
</tr>
<tr>
<td>Learned about new and different types of goals</td>
</tr>
<tr>
<td>Learned some well-stated goals</td>
</tr>
<tr>
<td>CATS</td>
</tr>
<tr>
<td>Learned a new assessment technique</td>
</tr>
<tr>
<td>Learned variations on an assessment technique</td>
</tr>
<tr>
<td>Increased motivation to use different assessments</td>
</tr>
<tr>
<td>Searchable Tools</td>
</tr>
<tr>
<td>Those who found tools found this section to be useful</td>
</tr>
<tr>
<td>Resources</td>
</tr>
<tr>
<td>Learned about new resources (books or links)</td>
</tr>
</tbody>
</table>

Intended use
The participants left their FLAG visit with a positive overall response, as indicated by their future plans. Ninety-six percent said they would recommend the site to a colleague, with 9 having already told a colleague about the FLAG by the time of the interview and 21 stating specific people to whom they would mention the site. Many had plans to revisit the site: 58% had definite plans to revisit FLAG and 20% said they would probably re-visit the site. Also, 15 participants stated plans to use an assessment technique in one of their courses: five were mathematicians, three were engineers, three were biologists, three were chemists and one was a physicist.

Actual use
Roughly six months following the interviews (in May 2000), we sent a short email survey to the participants asking them about their use of the FLAG web site and received a large number (41) of responses, resulting in an 84% response rate. The responses (Table 6,Table 7) were evenly distributed among the disciplines and types of institutions.

<table>
<thead>
<tr>
<th>Table 6: Responses to survey, by discipline of participant (N=41)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
</tr>
<tr>
<td>Biology</td>
</tr>
<tr>
<td>Chemistry</td>
</tr>
<tr>
<td>Engineering</td>
</tr>
<tr>
<td>Mathematics</td>
</tr>
<tr>
<td>Physics</td>
</tr>
</tbody>
</table>

Table 7: Responses to survey, by institution type of participant (N=41)
The results of the survey showed a fairly high level of impact: twenty-eight (or 68%) of the 41 who responded to the survey reported using FLAG. Over one-half of the survey respondents had recommended FLAG to a colleague and about a quarter had used a tool or technique in their classroom (Table). All disciplines and institutions were represented with respect to use of FLAG in general. However, no engineers and no respondent from a Research institution reported adapting a CAT or Tool.

Table 8: Ways that survey respondents used FLAG, by discipline (N=28)

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Bio</th>
<th>Chem</th>
<th>Egr</th>
<th>Math</th>
<th>Phys</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended FLAG to colleague</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>21</td>
</tr>
<tr>
<td>Adapted a CAT/tool and used in class</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Total number of uses</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>28</td>
</tr>
</tbody>
</table>

Table 9: Ways that survey respondents used FLAG, by institution (N=28)

<table>
<thead>
<tr>
<th>Institution</th>
<th>Assoc</th>
<th>Bacc</th>
<th>Mast</th>
<th>Doct</th>
<th>Res</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended FLAG to colleague</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>2</td>
<td>4</td>
<td>21</td>
</tr>
<tr>
<td>Adapted a CAT/tool and used in class</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Total number of uses</td>
<td>6</td>
<td>5</td>
<td>8</td>
<td>5</td>
<td>4</td>
<td>28</td>
</tr>
</tbody>
</table>

We asked the survey respondents if they had revisited FLAG since the interview and this returned a surprisingly low number (12), especially given the high ratings the participants gave of FLAG and their high level of intent to revisit the website. At least one respondent from each discipline and one respondent from each type of institution had revisited FLAG. To determine their reasons for revisiting the site, we asked the participants to select, from a set of reasons, those that best fit their experience. The respondents who did revisit the FLAG often selected multiple reasons for returning, and most (10) were looking for more information on assessment techniques and/or tools (Table).

Table 10: Reasons that the 12 survey respondents revisited FLAG

<table>
<thead>
<tr>
<th>Reason</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Looked for ideas on assessment techniques</td>
<td>7</td>
</tr>
<tr>
<td>Looked for tools to use in the classroom</td>
<td>6</td>
</tr>
<tr>
<td>Read more about an assessment techniques</td>
<td>6</td>
</tr>
<tr>
<td>Looked for other resources</td>
<td>5</td>
</tr>
<tr>
<td>Read more about theory of assessment.</td>
<td>4</td>
</tr>
<tr>
<td>Other: Showed it to a colleague</td>
<td>1</td>
</tr>
<tr>
<td>Other: Reviewed what was there.</td>
<td>1</td>
</tr>
</tbody>
</table>

As indicated above, a large number (29) of the survey respondents did not revisit FLAG following the interview. Again, we asked the survey respondents to select from a list of possible reasons for not returning to FLAG (Table 11). Most (69%) said that they were too busy to return to the FLAG and six respondents reported using FLAG in more than one way: one respondent reported that she had recommended FLAG to a colleague and adapted a CAT for use in her class, and two respondents reported that they had recommended FLAG to a colleague and downloaded a tool for use in their class.

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5 Three respondents reported using FLAG in more than one way: one respondent reported that she had recommended FLAG to a colleague and adapted a CAT for use in her class, and two respondents reported that they had recommended FLAG to a colleague and downloaded a tool for use in their class.

6 See 5.
selected reasons related to implementation of Tools or CATs: five said it was not clear how they could implement a CAT and one said the tools available were not applicable to his/her course. These five respondents represented biology, chemistry, mathematics and physics; they also came from a range of institution types (except Doctoral). Four volunteered that they had forgotten about FLAG.

<table>
<thead>
<tr>
<th>Table 11: Reasons for NOT returning to FLAG (N=29)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reason</td>
</tr>
<tr>
<td>Was too busy and didn't get a chance to visit the site</td>
</tr>
<tr>
<td>Was not clear how one could implement the CATs</td>
</tr>
<tr>
<td>Was not teaching an introductory course this semester</td>
</tr>
<tr>
<td>Other: Forgot about FLAG</td>
</tr>
<tr>
<td>Did not have a bookmark for the site or lost the URL address</td>
</tr>
<tr>
<td>None of the tools available seemed applicable for my course</td>
</tr>
</tbody>
</table>

The respondents provided additional comments about their reasons for not returning to FLAG and/or not using the tools or techniques on the site. One respondent's comment best reflected why many felt too busy to return to the site, emphasizing that time was needed to implement these techniques and tools.

*At least last I looked, these aren't the kind of things you can "quickly grab and use." ... They require at least some thought and modification to directly use in your class.* [Engineering instructor, Master's institution]

Some participants said that the time wasn't right for incorporating new techniques since they had already planned their spring syllabi. Others said they lacked time during the school year to plan how to use new techniques and that the summer was a good time to spend thinking about these issues.

*The syllabi for my courses were already prepared and I saw no need to modify them at this point.* [Physics instructor, Baccalaureate institution]

I liked the site, and looking back I'm surprised [that] I haven't gone back to it. I suspect, however, that it is because I tend to make most changes to my classes during the summer, when I have time to think about the classes (During the semester I'm usually trying to just get done [with] what I'd initially planned and I tend not to make changes mid-stream). [Mathematics instructor, Master's institution]

Similar to the data collected in the interviews, a large number (34) of the survey respondents had plans to revisit FLAG. Although this data is not as strong as actual revisits to FLAG, it does testify to the perceived value of FLAG to the respondents. The intent to revisit the site was shared by all disciplines (Table 2) and institutions (Table 3).

<table>
<thead>
<tr>
<th>Table 12: Plans to revisit FLAG, by discipline of participant (N=34)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
</tr>
<tr>
<td>Chemistry</td>
</tr>
<tr>
<td>Engineering</td>
</tr>
<tr>
<td>Mathematics</td>
</tr>
<tr>
<td>Physics</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 13: Plans to revisit FLAG, by institution type of participant (N=34)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associate of Arts</td>
</tr>
<tr>
<td>Baccalaureate</td>
</tr>
<tr>
<td>Master's</td>
</tr>
</tbody>
</table>
Some respondents cited very specific reasons for revisiting the site, whereas others were more general.

*I plan to consult the site as I plan courses for the fall. I will also encourage the department to look at it as we work on clarifying educational goals in our various classes and how to assess them.* [Biology instructor, Master's institution]

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*We are currently working on [a] revision of our introductory biology curriculum. I expect our faculty will use the site to develop new assessment tools.* [Biology instructor, Master's institution]

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*From the point of view of content, I think it is a good site and plan to use it more. I hope to have time to look at it more carefully over the summer.* [Engineering instructor, Research institution]

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*I have not made use of the FLAG website as I had hoped to, due to the time constraints (my tenure review process), but I still intend to.* [Physics instructor, Doctoral institution]

A few respondents planned to revisit FLAG in hopes of finding new tools that they could use in their classroom.

*I will continue to check out the site for future improvements. More concept exam questions would be nice.* [Chemistry instructor, Associate of Arts institution]
Evaluation Findings: Participants' Experience on the FLAG

In this section, we present the participant's navigation patterns on the FLAG: where they went, what they did in each section, and suggested improvements to the content of these sections. The experience of the participants in each section of FLAG, especially in the CATs section, provides some insight into what these participants -- and possibly other faculty in the target audience -- find interesting and useful as they seek out new assessment or teaching techniques. Overall, these participants appreciated and valued the emphasis on the "whys" of assessment, but were most concerned with getting concrete information on how to use assessment effectively in their classrooms.

FLAG navigation
Eighty-four percent of the participants spent more than the suggested amount of time (1/2 hour) on the FLAG, and a little less than half (44%) spent over an hour on the FLAG. Most reported moving linearly through the site: from "Getting Started," to "Matching Goals to CATs," to "CATS," to "Searchable Tools," and finally to "Resources." This linearity of movement is implied in the degree in which sections were visited, as indicated in Table 14.

Table 14: Sections of the FLAG visited by participants (N=49)

<table>
<thead>
<tr>
<th>Section</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Getting Started</td>
<td>48</td>
<td>98%</td>
</tr>
<tr>
<td>Matching Goals to CATs</td>
<td>46</td>
<td>94%</td>
</tr>
<tr>
<td>CATS</td>
<td>48</td>
<td>98%</td>
</tr>
<tr>
<td>Searchable Tools</td>
<td>34</td>
<td>70%</td>
</tr>
<tr>
<td>Resources</td>
<td>23</td>
<td>47%</td>
</tr>
</tbody>
</table>

The remaining participants moved in a non-linear fashion, generally selecting those topics of interest. It should be noted that some of the participants said that they browsed the site linearly solely to prepare for the interview and normally would not have taken that approach.

Most of the participants visited one to four CATs and 12 visited most of the CATs. The participants visited CATs for varying lengths of time and spoke about their experience with the CATs to varying degrees. As a result, the numbers (Table 14) reflect only that an instructor looked at a CAT to some degree and mentioned that CAT in their interview; they do not necessarily reflect a "deep reading" on the part of the participant. However, visiting a CAT does indicate some degree of interest since the participants tended to read CATs that were familiar to them, looked interesting to them, or were suggested by the Matching Goals to CATs section based upon their goal selection (see "Selecting a CAT to read more deeply").

---

7 Min time spent = 25 minutes; Max time spent=6 hours.
Table 15: CATs visited by discipline

<table>
<thead>
<tr>
<th>CAT</th>
<th>Biology</th>
<th>Chemistry</th>
<th>Engineering</th>
<th>Math</th>
<th>Physics</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept Mapping</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>33</td>
</tr>
<tr>
<td>ConcepTest</td>
<td>5</td>
<td>9</td>
<td>8</td>
<td>5</td>
<td>5</td>
<td>32</td>
</tr>
<tr>
<td>Attitude Survey</td>
<td>5</td>
<td>4</td>
<td>9</td>
<td>6</td>
<td>4</td>
<td>28</td>
</tr>
<tr>
<td>Interviews</td>
<td>4</td>
<td>5</td>
<td>9</td>
<td>6</td>
<td>4</td>
<td>21</td>
</tr>
<tr>
<td>Conceptual Diagnostic</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>Portfolios</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>Scoring Rubrics</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>17</td>
</tr>
<tr>
<td>Performance Assessment</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Weekly Reports</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>SALG</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>8*</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>9</td>
<td>10</td>
<td>49</td>
</tr>
</tbody>
</table>

* SALG was not a CAT at the time of the interviews. It was listed as a “new item” in the purple left-hand navigation bar on the front page of the FLAG web site.

Each CAT was visited by at least one participant from each discipline and also was visited by at least 30% of participants, which indicates some level interest in each of the techniques. Some disciplines had clear favorites: 8 of 10 biologists looked at Concept Mapping, 9 of 10 chemists looked at ConcepTests, and the engineers most visited the Attitude Survey. The most popular CATS were the Concept Mapping, ConcepTests, and Attitude Survey.

Experience on the 4 "non-CAT" sections

Similar to their navigation patterns through the sections, most participants moved linearly through each of the sections: they read the first page, and if they found a link to the later pages of that section, visited these pages. As noted in "Quick improvements to FLAG," a substantial number of the faculty missed the second pages of the "Getting Started" section, "Matching Goals to CATs" section, and the "Resources" section. When the participants did find something of interest, they often downloaded the entire document and then printed it out to read off-line.

The participant experience on the "Getting Started," "Matching Goals to CATs," "Searchable Tools," and "Resources" sections can be encapsulated easily and appears in Table below. Many of these findings are covered in more depth in the first Formative Report (Daffinrud and Herrerra, 2000).

Table 16: Participant experience in four sections of the FLAG

<table>
<thead>
<tr>
<th>Section</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Getting Started</td>
<td><strong>Experience</strong>: Most were familiar with topics, and skimmed the text-heavy section. Some looked for information on FLAG's use of terminology and philosophy on assessment to better understand how assessments would be used. <strong>Suggestions</strong>: Make more concise and use hyperlinks effectively to outline major themes and link to sub-themes. Thus, readers would not need to read all areas, and have the freedom to pursue items of interest.</td>
</tr>
<tr>
<td>Matching Goals to CATs</td>
<td><strong>Experience</strong>: Almost all were initially confused by the large (50+) number of</td>
</tr>
</tbody>
</table>
goals to select from and wanted to select a large number of them. The site suggested they select 5 or 6, but many felt this was not possible and would feel guilty for not selecting all of their goals. A few reacted by focusing on one or two primary goals.

**Suggestions:** Prepare readers for the large number of goals on the introductory page and emphasize the need to restrict self to one or two goals, even though more may be tantalizing. Also, edit for redundant goals.

**Searchable Tools**

**Experience:** All participants searched for tools by looking at the list of tools sorted by discipline. Because there were so few tools, most left this section after not finding any in their field. Some perused the list of tools in other disciplines. A few used the search engine, but most searches returned no tools and some assumed they did something wrong.

**Suggestions:** Increase number of tools. Remove disciplines or CATs from lists that don't have any associated tools, so as to reduce emphasis on "emptiness" of this section and the amount of scrolling readers have to do. Also, remove the search engine until most searches return at least one tool.

**Resources**

**Experience:** Participants who visited this section spent most of their time on the annotated bibliography and the list of web links on assessment. Many tried the clickable map of experts, but most did not find an expert in their state. Some clicked on the articles section, but left when they found that these were not on-line.

**Suggestions:** Participants suggested some additional web links and increasing the number of assessment resources.

**Experience in the CAT Section**

The open-ended interviews in which we walked through the site with the participants and asked them to provide feedback as they looked through the site provided a rich, detailed picture of kinds of issues they faced when thinking about adopting an innovation into their classroom. While very interested in learning about new "field-tested" techniques, most of these participants were also careful in what they would adopt and adapt: it needed to be a good fit with their own teaching practice, class size and style, and subject matter. Here, we use the phrase "adopt and adapt" because it was clear that these participants expected that they would need to spend time adapting a technique to the needs of their particular classroom.

Many of these participants were looking for guidance in very concrete issues in assessment and their suggestions for improving the CATs often centered on providing actual examples of use and detailed instructions of implementation. While they often found sufficient instruction in the CATs on the basics of a technique, many asked larger questions about fit, such as: "How do I grade these assessments and fit them into my overall grading of a student?" "How do I describe them in a syllabus?" and, "How do I introduce them to the students?"

Participants went through similar processes as they thought about they CATs: they decided which CAT to read in more depth, they read a CAT for "fit" with their teaching style, time constraints, and classroom; they considered ways to adapt a CAT; and some dismissed a CAT for lack of fit. The following sections describe each of these steps in more detail.

**Selecting a CAT to read more deeply**

As noted in the earlier section, most the participants visited 1-4 CATs. Participants selected these CATs because they were familiar with them in some way, because they looked interesting from their first descriptive page, or because they were suggested by the "Matching Goals to CATs" section. Most chose to read in-depth those CATs that they had heard about from a colleague, their department had been
discussing, or had used prior to visiting the FLAG. Most were looking for additional information on a particular technique, but some used their visit as a credibility check and looked to see whether the CAT resonated with their experience.

[I went to the Interviews CAT], because that’s something similar to what my colleague [did] that I was telling you about. I first got intrigued by what she was doing -- giving the students one on one or two students at a time -- interview assessment. That’s how they would report to her about what they had done in lab. [Mathematics instructor, Doctoral institution]

And we are doing some portfolio assessment at the college here or thinking about it so I do want to see those. [Mathematics instructor, Baccalaureate institution]

Well, in other words, [I looked for] what kinds of things get added to performance assessments. I’ve tried some of that myself in both our big class and in the small “Chemistry in Society” class -- in fact, part of the final was a performance assessment. And the whole issue about how you set it up, how you score it, how do you provide feedback to the student, is a very different setting. And it probably didn’t take me any longer to do that than it would have to write and grade a written final. So in terms of total time investment, it was probably about the same, but I thought I learned some different things about students as a result of doing that. [Chemistry instructor, Doctoral institution]

This selection based on familiarity coincides with Robert Kozma's finding in his study of faculty change processes. In his interviews with faculty involved in adapting innovations from two types of programs, he found that faculty adoption of innovations into their teaching “is evolutionary: new instructional practices are built on past practices” (1983). Faculty tend to make small changes in their teaching, testing variations on existing practices rather than adopting entirely new ones.

Some participants did read CATs with which they had no familiarity. Many of these participants discovered a new CAT through the Matching Goals to CATs section, although some found them through random browsing in the CATs section. As one participant said,

But the things that matched up well [using the Matching Goals to CATs engine were] that concept mapping which I wasn’t familiar with and conceptual diagnostic tests and I looked through most of them to kind of briefly see what they were all about. [Physics instructor, Doctoral institution]

Thinking through the "fit" of a CAT
The participants read the CATs with an eye toward what "fit" their needs in the classroom or what they felt other faculty might need in the classroom. Striking about this emphasis on fit is that the participants were not convinced to use a technique just because it was successful; it had also to fit their needs. This also reflects Kozma's finding that the success of an innovation is not a sufficient reason for a faculty member to adopt that innovation (1983). This is reflected in the following participant's statement:

I’m going to try to select some things to use. I wouldn’t guarantee that I’d use all of the CATs. I’ll try to use the ones that appear to be most appropriate for me. [Biology instructor, Baccalaureate institution]

Overall, the participants were trying to balance many variables: their personal interest in an assessment strategy, their goals for their students, their own teaching goals and style, and the constraints they faced (e.g., their time for preparation, the material they wanted to cover, their experience level with teaching, their class size, the types of students they teach). Many weighed the cost of using a technique (in terms of class time, preparation time, evaluation time, etc.) with the benefits of its use. The following quotes provide a glimpse into this thought process and best represent this struggle to weigh all the factors
involved in selecting new assessments. These reflective comments are illuminating in that they reveal the needs of the participants as they consider adopting new teaching techniques.

*But with the portfolios, with the amount of material that I would have to read, I don’t know that I could use that in a way that would give students the kind of feedback that they need. In terms of class size for portfolios, it says “most applicable in small classes.” I am trying to read writing from students. I tend to do that on examinations, and I also do it on index cards that they hand in after class for me. … I have no TA help in terms of grading, and as it stands, I feel strongly about writing in introductory classes, and so I get them to do as much writing as I can manage, but I think that the portfolios would just overwhelm me.*  [Biology instructor, Doctoral institution]

*Actually I’m looking at the concept tests now, and I like the idea of having the class vote on something and then use that as a gauge whether to go on or whether to talk about it more, and I do something like that anyway. But creating more intricate questions takes a fair amount of preparation, it sounded like. So the informal nature in the class I liked, but I don’t know if I would get any more details than I normally do in class.*  [Mathematics instructor, Master’s institution]

*Well, I [read through the ConcepTest CAT and] thought, “Well that goes into that a lot more than I’ve done in the past; I kind of like that idea.” … Now, I’ve--but at the same time I’m thinking, “Well, this is going to take class time.” But then, if it was an important concept, you want them to learn it anyway [laughing].*  [Physics instructor, Baccalaureate institution]

*My students generally all know each other and me. … And I often give these kinds of [ConcepTest] questions more in homework assignments and then questions that center on misconceptions. And just say, you know, I’ll frame them like, “So and so says that it’s this way and so and so says that it’s that way, and who’s right and why?” And have them argue it out on paper. But I’ve not tried to have them argue it out to a real person, I guess. This is a real useful technique but not exactly the way it’s explained here because my class culture probably wouldn’t be a perfect fit.*  [Mathematics instructor, Baccalaureate institution]

It is important to note that the idea of "fit" was also related to the degree to which the participant could visualize and understand the technique and how to use it in the classroom. Thus, the participants' suggestions for improvements of the CATs generally involved ways to include more detailed information on the use of the technique (see "Improving the CATs").

One important area of fit was that of finding CATs that assessed goals that were valued by these participants. The goals raised when discussing a CAT appear in Table below and they represent the types of goals that these participants valued.

<table>
<thead>
<tr>
<th>Table 17: Goals important to participants in selecting a CAT for &quot;fit&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessing student attitudes about their learning</td>
</tr>
<tr>
<td>Assessing student attitudes about science</td>
</tr>
<tr>
<td>Assessing whether students are learning the concepts</td>
</tr>
<tr>
<td>Assessing student understanding of relationships between concepts</td>
</tr>
<tr>
<td>Assessing student ability to communicate</td>
</tr>
<tr>
<td>Giving students feedback about their progress</td>
</tr>
<tr>
<td>Engaging students in the class and in the material</td>
</tr>
<tr>
<td>Increasing student interest</td>
</tr>
<tr>
<td>Getting quick feedback about students' understanding of the material</td>
</tr>
</tbody>
</table>

Evaluation Findings: Participants' Experience on the FLAG
Making adaptations to fit a CAT into their classroom
Almost all participants said that they would need to make revisions or adaptations to any assessment technique or instrument that they found on the FLAG or elsewhere. They said that no instrument would likely fit their class exactly and these adaptations were necessary.

What I can do is kind of give them a kind of concept test. And what I do do, is give them a novel situation and say, "Ok how, in this situation, could you describe natural selection causing evolution in the population?" But, I get stuck at how to take a vote. Because it could be expressed in a variety of different ways. There isn’t one simple answer. So that’s something I just have to think more about. That doesn’t stop me from thinking about that idea and using it. But that’s what I think people would have to realize in going into each one of these things, is that they can’t be followed like a recipe anyway. They are an idea that you modify to suit your own subject and your own students and abilities, personal abilities. And I presume that’s what the authors and editors are thinking. That they’re not just plug in and use. [Biology instructor, Master's institution]

With regard to the CATs themselves, some participants talked through ways in which they could make adaptations to the CATs to make them more usable in their classroom. A few participants suggested new ways to use an assessment technique. The following participants, all of whom had experience with a technique, made the following adaptation suggestions:

I’ve done a very small version of this [Attitude Survey]. And the other thing is I thought this might be long, somewhat time consuming to do in the middle of a class. In the middle of a semester even to ask this many or this type of you know substantial questions on a regular basis would be a lot to do. But I can see just like picking one or two, saying, you know, the instructions were clear, this activity seemed to contribute to the overall focus of the class. You know, those kinds of questions seem like the kind of things that are worthwhile asking more than we do. [Mathematics instructor, Baccalaureate institution]

And I thought the little description by Sheri Sutherland was an interesting description because I’ve done it [interviewing] formally. I haven’t really done it informally and I could probably start to use that technique more on an informal basis. And so I think I’d like to look at that and see how you could adapt more rigorous research techniques to more informal settings. So that’s one I got excited about because I haven’t done that. I have asked for feedback from students, but it really hasn’t been in an interview format, it’s been more, “Where did you get hung up on this example of modeling?”, and so I’ve gotten feedback that way. But interviews, I think with small groups of students or individuals might tell me more. [Biology instructor, Doctoral institution]

For instance, a CAT that I use quite a bit is … Concept tests. I’ve done that for a long time. In not quite as formal a way as it is illustrated in that site, but they talk in the site about how you can go to various web places and find concept test questions. To me, you wouldn’t really even need to do that. You almost make those up on the fly, as you plan your lecture and I don’t think it adds any more time to the lecture to think up two or three good concept test questions for a lecture, so I don’t think that takes up a whole lot of time. [Mathematics instructor, Master's institution]

Deciding when a CAT does not fit
The participants decided against using a CAT in their classrooms for various reasons. Some were skeptical that a technique would give them useful data. Most worried about the time to create an instrument, to implement it in their classroom, and/or to analyze the resulting data. A few felt that some CATs were not appropriate for their discipline, and others said that the technique did not “fit” their class size or other strategies. Additionally, the participants also decided against using a CAT when they did not have a clear idea of how to use the technique in their classroom, and suggested ways in which the CATs
could be improved (see "Improving the CATs"). In Table 18, we list the CATs and the comments regarding their lack of fit.

<table>
<thead>
<tr>
<th>Table 18: Participants' reasons for lack of fit of CAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude Survey</td>
</tr>
<tr>
<td>• Takes too much time to create a valid and reliable survey</td>
</tr>
<tr>
<td>• Students will not provide honest or useful feedback</td>
</tr>
<tr>
<td>• Examples given not appropriate for class</td>
</tr>
<tr>
<td>ConcepTest</td>
</tr>
<tr>
<td>• Class size too small</td>
</tr>
<tr>
<td>• Teaching approach different (doesn't lecture)</td>
</tr>
<tr>
<td>Concept Mapping</td>
</tr>
<tr>
<td>• Takes too much time to teach students how to use them</td>
</tr>
<tr>
<td>• Takes too much time to create a fill-in-the-blank concept map</td>
</tr>
<tr>
<td>• Takes too much in-class time</td>
</tr>
<tr>
<td>Conceptual Diagnostic Test</td>
</tr>
<tr>
<td>• Takes too much time to develop a good test</td>
</tr>
<tr>
<td>Interviews</td>
</tr>
<tr>
<td>• Students would not provide honest feedback</td>
</tr>
<tr>
<td>• Sampling problem prohibitive for large classes</td>
</tr>
<tr>
<td>• Takes too much time to prepare, do, and analyze</td>
</tr>
<tr>
<td>Performance Assessments</td>
</tr>
<tr>
<td>• Not appropriate for discipline (mathematics)</td>
</tr>
<tr>
<td>Portfolios</td>
</tr>
<tr>
<td>• Takes too much time to evaluate</td>
</tr>
<tr>
<td>• Not appropriate for discipline (biology)</td>
</tr>
<tr>
<td>Scoring Rubrics</td>
</tr>
<tr>
<td>• No comments about lack of fit.</td>
</tr>
<tr>
<td>Weekly Reports</td>
</tr>
<tr>
<td>• Takes too much time to read/evaluate writing</td>
</tr>
</tbody>
</table>

**Improving the CATs: Providing concrete details**

Many participants provided suggestions for improving the design and content of the CATs. All of these suggestions focused on adding concrete examples and details that would make it easier to implement the technique in a classroom or make it easier to understand the technique itself. A few participant comments provide an overall picture of this emphasis on the concrete.

*The more detailed each of these techniques can be discussed in terms of how you actually carry them out in a classroom situation, the more useful they are going to be. The devil [is] in the details, really. It’s how you actually set up the problem, how you carry it out, how you respond to student questions, how you set up groups, or how you do your voting. That kind of stuff, or those kinds of things are stumbling blocks for people who are just starting. [Biology instructor, Master's institution]*

*---------- ------------------------*
*I haven’t ever used concept mapping, and this gets back to this question about if you’re looking to change something, what will cause you to change it, or what will get you over the barrier. If you can’t picture exactly how it’s going to work, then you’re unlikely -- even if it sounds like a good idea -- you’re not likely to use it. [Chemistry instructor, Master's institution]*

The participants said that in order to use a technique, they needed to be able to visualize how a technique would work in their classroom. Participants mentioned many times that they needed to anticipate all the possible scenarios that could occur when introducing a technique into their classroom. In particular, they wanted to be able to anticipate problems in: (1) time to prepare, use, and analyze; (2) student preparation and use; and (3) grading. The following comments outline these concerns:

*First of all, that I've never thought of doing that kind of thing [Concept Mapping], and hope that students are getting the big picture and putting the pieces together. But to actually ask them to draw a picture of the pieces -- that never occurred to me. So that's cool. [long pause] Having just read it,
I haven't had time to really think about how I might actually implement it. I don't think I could ever grade such a thing, although it kind of refers to that. ... I've got to at least try and think through all the different possible outcomes and if it's not graded, will students take it seriously or not? I don't know. [Mathematics instructor, Baccalaureate institution]

Additional suggestions (Table 19) reflect issues that are important to these participants and focus primarily on the "big picture" issues of how to incorporate the assessment technique comfortably and seamlessly into their courses. Their emphasis was on providing explicit detail: providing actual examples of course material or step-by-step directions.

<table>
<thead>
<tr>
<th>Table 19: Suggested additions to the CATs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples of course syllabi, actual handouts, and student work of the assessment technique</td>
</tr>
<tr>
<td>How to train students to do the assessment correctly</td>
</tr>
<tr>
<td>How to motivate students to &quot;buy in&quot; to the assessment technique</td>
</tr>
<tr>
<td>When and how often to use the assessment</td>
</tr>
<tr>
<td>How to grade the results</td>
</tr>
<tr>
<td>How to incorporate assessment technique with other graded work</td>
</tr>
<tr>
<td>Provide easily downloadable tools and/or information on how to develop valid and reliable tools</td>
</tr>
</tbody>
</table>

Many of these participants valued anything that enabled them to "peek" into a colleague's classroom. Although the wasn't specifically stated by the participants, it was clear that this need for the concrete was related to the fact that most of the participants were one of a few or the only faculty in their department involved in adding innovations to their teaching. Thus, the CAT descriptions need to provide the kinds of information that could be gained in the missing conversations with colleagues or observations of their teaching.

Let me tell you one more thing. That video was very intriguing again because it showed me some other professor with some other students than mine and, you know, it was like visiting their classroom. So I don’t know if that could be worked in, if there could actually be a video of the person who did the interview page there you know. A video clip of an interview with students. Of course it would have to be longer. ...But anyway, anything that brings to me something from someone else’s classroom is attractive. [Mathematics instructor, Doctoral institution]

Additionally, many participants emphasized the importance of examples in understanding and using an assessment technique, for these examples enabled them to quickly understand ways to use the technique. One participant, referring to the Attitude Survey CAT, explained this point as follows:

Having those examples up early are great because if you talk about this in the abstract it is very difficult to know what the heck we are talking about. You know, it is like trying to describe the color red to somebody who can’t see. You know, you can spend a lot of time doing that and not get anywhere, but actually looking at a few objects that are red communicates that much more quickly. So seeing this sample was very effective. And I said "Oh, oh yeah, I know it." In fact, this is sort of a survey that a lot of course evaluations surveys look like. [Physics instructor, Baccalaureate institution]
Evaluation Findings: Participants' reaction to FLAG's design

During the interviews, we attempted to recapture each participant's experience by asking them walk us through their visit to FLAG. This allowed us to uncover subtle areas of design and enabled us to identify places on the web site that the participants didn't find and provide assistance in (as well as document) areas that confused them.

Quick improvements to FLAG
A member of the Evaluation Team met with the web designer of the CL-1 team in the fall to provide him with a list of recommendations in the design, based on interviews with the participants. At this time, the interviews had just begun and no large-scale recommendations were made.

One example of a design problem was that in a few sections of the FLAG, the participants were not finding information past the introductory page. The links to later pages in the section appeared in the left-hand navigation bar, but participants often did not see this and assumed the section had only an introductory page. This was extremely problematic and was fixed by written navigational directions or button that took them naturally to the next page. It also signaled a possible difficulty with the use of frames on the FLAG: participants weren't visually drawn to the left-hand navigation bar.

Another design recommendation was to remove the "dual-purpose" nature of the "Getting Started" section. In this section, participants expected to see a description of Assessment or a description of FLAG, but not both. At the time of the interview, this section had a description of the FLAG on the first page and then an introduction to assessment on the remaining pages. Coupled with problems getting past the first page, a significant subset of participants completely missed the introduction to assessment, thinking that the section's only purpose was to orient them to the design of the site. The designer moved the description of the site to the front page of the site and solved this problem.

Design reflects the struggles of designers
One key finding of the evaluation was that, if not consciously resolved in the design, the struggles of the CL-1 team as they developed the site presented similar difficulty for the participants. The first such example of this issue involved distinguishing between a CAT and a Tool. Early in the development stages of the FLAG, the CL-1 team struggled to distinguish between these two terms and it eventually resolved this issue by defining a CAT to be "a general assessment technique to be used in a classroom" and a Tool to be "a specific example of an assessment technique." Once this was agreed upon, the team used these terms extensively on the site and defined them only in introductions to sections. Not surprisingly, participants had difficulty identifying the difference between these two terms even after they visited the different sections, as appears in the excerpts below:

I got a little bit confused when I went to the "Tools," I guess you were calling it. You know I am pretty familiar with this stuff and it didn’t jump out at me the difference between the [region of] assessment techniques and different region called "Tools." [Biology instructor, Baccalaureate institution]

And there was nothing [in Biology], and I wasn’t sure why. I felt like I could use the CATs listed by the table with no problem whatsoever, but when I tried to get to the step [in Searchable Tools] where I specify either by technique or by subject, it didn’t -- Nothing was there. I tried to click on biology, and nothing happens. Do you know why? [Biology instructor, Doctoral institution]

An even larger struggle that occupied the CL-1 team centered around the degree to which the site was educating its audience and the degree to which it was providing a service to its audience. The team was
concerned that some faculty would use the services (CATs and tools) of the site without regard to the philosophy of the site, and hoped to encourage them to read through information before they even looked for tools and techniques. This issue arose because the developers could not control how faculty used the site and were concerned that faculty, without proper context, would use an assessment incorrectly and then have a negative impression of the technique. Because of this, they created a design that implied that the reader should move from left-to-right though the web site, from "Getting Started" to "Matching Goals to CATs" to "Classroom Assessment Techniques" to "Tools" to "Resources." However, this implied linear motion through the FLAG gave some of the participants the feeling that they were "jumping through hoops." Some of the participants began to get impatient with the first two sections because they expected to find, and were most interested in reading about, assessment techniques and tools.

R: It [the Getting Started section] was long, actually. Because it took awhile, the getting started section had, you know, “Why do we do assessments?” and then several things and then stuff about the authors. And I went through it in order, and by the end of all of that I still wasn’t sure what the CATs were.

I: So, although it introduced you to assessment to some degree, it didn’t orient you to the site, or to the CATs, is that what you’re saying?

R: Right. They have things on why do assessment, something on the authors, some stuff on glossary, but it seemed much easier once I dove right in.

I: To the CATs?

R: Right. Or even, I mean at that point I dove right into the matching goals, and that was when I felt like I was really using the web site. Before that I was reading a lot about the web site. [Mathematics instructor, Master’s institution]

Participants also reacted to the developers’ education-service goals when using the "Matching Goals to CATs" section. The developers of the FLAG had two purposes for the "Matching Goals to CATs" section: (1) to provide faculty with a list of well-stated goals that they could have for their students and thereby help them to value a GSO model of teaching; and, (2) to provide a pathway to CATs aligned with user-selected goals. Because the team was concerned with emphasizing well-structured goals, the table listed 50+ goals that were only slightly different from one another. Most participants reacted to this large number of goals by choosing many more than the suggested 5 or 6 goals and felt frustrated by the sheer amount of choices. They said that the introductory page needed to warn them about the number of goals and to concentrate on selecting only their top one or two goals. It is important to note that this section did provide an educational purpose for the participants: many appreciated seeing a range of well-formed goals and liked the emphasis on the need for goals in teaching. Another source of confusion was that the table in this section listed the CATs before they had been described on the site. This decision not to describe the CATs earlier was somewhat an artifact of this dual education-service role (and a way to reduce the amount of overall introductory text to be read) – the team felt that placing a description of each of the CATs early on in the site would encourage users to skip directly to the CATs rather than read introductory material.

I clicked on [the left frame] and finally I found [the table]. I was a little confused with the table that comes up when you do that. You know, you have the split screen with the arrows -- you can go up and down on the top part of the page of the page till the bottom. And then on the bottom you have this table that you are supposed to click on and I clicked off about ten things all the way down it. But I guess I wasn’t clear [about] what these Xs represented.... I’m not real big into the terminology and things that go along with assessments. So I guess when you have an X under “CT” "concept
test" -- I guess "concept test" makes sense. But maybe "scoring rubrics" or "portfolios," I’m not real clear what that means necessarily. I mean I have a vague idea, but for the most part these Xs weren’t really that meaningful. [Mathematics instructor, Doctoral institution]

Most of these difficulties were resolved as the participants explored the site more and learned its overall structure. In fact, most of these comments reflected participants’ immediate reaction to FLAG or a FLAG section as they visited the site. Regardless, the current research on the web indicates that users are finicky and user patience with difficulties on the Web is figured to be around 10 seconds (Lynch and Horton 1999). Some participants said that, had they not been reviewing the site in preparation for the interview, they may have left given the initial difficulties.

Suggestions for FLAG design
Most (80%) of the participants had some trouble navigating the FLAG web site. This difficulty ranged from having to spend a few minutes orienting themselves to the structure of the site to having the site crash or getting lost on the site. This difficulty reflects problems in the design, but also reflects just how easy it is for users of the web to become disoriented or lost when browsing. Many web use studies indicate that navigation is a major problem for users because they simultaneously balance the need to locate information, the desire to explore, and keep track of where they are on a web site (Weibe and Howe 1998).

The difficulties that participants had with navigation provided some insight regarding larger design issues that are likely to be encountered in the development of other web sites or the improvement of the FLAG. We present six areas of design that the participants experienced difficulty with while browsing the FLAG. Most common to these six areas is the participant’s desire to be able to quickly scan for information of interest and go to these areas. Participants wanted to skim through FLAG (or sections of FLAG) and quickly find and download items of interest. This behavior is common in web use: users scan, rather than read word-for-word, sites for information of interest (Spool et al., 1997; Morkes and Nielsen, 1998).

Provide as much "up-front" information as possible
The participants suggested that the introductory pages of the web site and of its individual sections provide information on its contents and how it should be navigated. With this introductory information, they could decide whether to read the web site or section in more detail or move on to something else. The participants’ emphasis on this point was most apparent in the “Getting Started” and “Matching Goals to CATs” sections of the FLAG, primarily because some participants felt that they were jumping through hoops reading these sections and had their purpose been more clear in the introduction, they could have just skipped them entirely. This is related to the dual education-service role described above (“Design reflects the struggles of designers”). The participants suggested that the FLAG contain: (1) a description of its contents on the first page; (2) a guide for using the web site (e.g., “if you are new to assessment, please read the Getting Started section for an introduction”); and, (3) a guide for using individual sections of the web site. The following comments reflected these findings.

And I got a little bit more information, but I still wasn't sure how to use the web site. In Getting Started, it says, "Overview of the FLAG, welcome to the FLAG. It's been designed by and for da, da, da, da, da, da." And I still wasn’t sure how I was supposed to use this. "Getting Started," "Matching Goals," – I don't know, maybe I just didn't read carefully enough, but I just didn't feel like I knew how to use the web site. [Engineering instructor, Doctoral institution]

I think that if you had something in the beginning that said, "If you have no idea why you are at this web site, read this introduction and learn a little bit about some of the pros and cons of assessment, what things you can gain from it, what things you might not, why you might be interested in doing this. If, however, you've been exposed to a variety of things, you may wish to jump ahead and here
are some of the nice things that are on this web site. You know there really are a number of pages on this -- assessment basics, assessment and course development and all that sort of stuff. There are a fair amount of things there. [Physics instructor, Baccalaureate institution]

And I think that once you get to the [Overview of the FLAG] you have a layout of what things are but not at the very onset. Because it is not obvious [from the first page of the FLAG] if I'm just here to look at the assessment techniques. It needs to be a little more obvious how to get to that. Because that to me is the main thing that is here. And the rest of it is just help for that. [Engineering instructor, Master's institution]

All sections of the FLAG web site offered introductory pages, but some participants found some more effective in the way this introduction is provided. Every participant liked the introductory pages of the CATs: they could scan these pages to determine quickly whether they wanted to read more about a CAT. Each CAT in this section had a first page that described the assessment technique, explained why it is useful, and outlined specific elements of its use of relevance to faculty: time to prepare the assessment, time to analyze the data, use in small/large classes, etc.

But I liked the boxes, for example, that were presented [in the CATs]. What’s involved and just a summary of preparation time and class time and kind of an outline, and that was always on the first page of each CAT. I liked that, and I liked all of the examples that they did. I thought that those were really nice. [Mathematics instructor, Master's institution]

Provide in-line navigation links that enable linear movement through a section
The participants suggested that the site provide navigation links that are in-line with the text or appear at the end of paragraphs, for this would imply that there was more to read and allow them to move linearly through the largely informational sections. Some did not like the navigation arrows to be at the top of the page, since they had to scroll to the top to go to the next section, and this was a distraction.

I did [feel lost] a few times. And where I would feel lost is I’d go a section and I would finish the bottom of the page and then I realize I would have to go to the top, you had these blue triangle navigators. [Chemistry instructor, Research institution]

Often, if in-text links did not exist, the participants weren't sure where to go at the end of a section. This was most apparent when the participants read through the introductory page of a section, reached the end, did not find a link called "next," and became confused as to where to go. The developers assumed that web site users would be familiar with a frames format in which navigational links appeared in some (usually, left-hand) navigation bar and naturally would look left for more detail. However, many participants did not look to the left for navigational links in the section and instead went to the next section. This may be related to recent findings that users on the web ignore graphics and focus mainly on text (Spool et al. 1997): the participants may have viewed the left-hand bar as a graphic, rather than a list of links. One participant's comments reflect this sentiment:

I had been through the introduction so then I went to matching goals to CATs, and there’s the introductory section on the top of the page that kind of talks about how that’s going to work, and then you get to the end of that introduction and it wasn’t immediately obvious to me that what I need to do was look over to the left. On some of the other pages it said, “Click on such and such in the upper left hand corner to go to blank.” And I mean I found it within a matter of a couple seconds, but when I got to the end, I’m like, “Okay, where do I go?” But in general I thought it was very usable. [Chemistry instructor, Master's institution]
The participants' comments regarding their navigation through the FLAG revealed that some had difficulty identifying hyperlinks and remembering their place in the site when jumping around with hyperlinks. These difficulties arose mainly when the site behaved differently than participants expected. Some participants cited difficulties when underlined text presented in default hyperlink colors was not actually hyperlinked or when directions told them to click on text and that text was not hyperlinked. They also had trouble when in-text links pointed outside the section; most participants were able to find their way back using the "back" button in their browser, but preferred a more careful use of hyperlink notation and of hyperlinks.

And then sometimes I would use the lists on the left, sometimes I’d click on a thing. A lot of the links don’t actually have links. They look like they have links but they don’t go. For example, there are things that are written in blue, but sometimes the blue is just a highlighted quote, and sometimes the blue is a link, and so I’d click on them thinking it was going to take me somewhere and it wouldn’t take me. [Mathematics instructor, Doctoral institution]

But I did find the hypertext links kind of tough because, you know, you’d be reading and it said—your first have to break down what your goals are, and I would click on that and I would go over there and I would be caught in that text and I would forget where I had started because I’d wanted to go back to where I had started. It wasn’t hard; in essence, I’d just use the back button. [Chemistry instructor, Research institution]

The difficulty in navigation that the participants had is not uncommon: users frequently get lost using hyperlinks. Most have difficulty remembering information from different web pages (Spool, 1996) and many navigate the web based upon where they were before, which quickly taxes their short-term memory (Kanerva et al., 1998).

Participants appreciated the value of in-text hyperlinks because they reduced the amount of text they had to read, yet many still felt the urge to be thorough and click on every link they encountered in reading. They appreciated hyperlinks that gave them options to explore a piece of information more deeply and said that hyperlinks should continue to be used to reduce the amount of text that appears on one page so that a reader can get a general impression of the main ideas. This format allows them to explore subtopics as it suits them, rather than having to skim through large amounts of text.

Because what I did is I went through it, I didn’t link to any of them until I was done and then I went back, and that was nice to immediately go to those. And I could see where that would be very useful the second time you went through. I thought that was good. [Physics instructor, Master's institution]

Because they also had a competing desire to read information behind a hyperlink, the participants felt that it was important not to "overlink" text on a site and to link only to pages that are part of the written discussion.

R: For me, it was a little bit distracting. Maybe it was just me, but you have links. Every time you list classroom assessment techniques you have a link, and it was a little bit distracting. ‘Cause every time I hit it -- you think ‘cause it's highlighted [that you should click on it]. And I almost felt like it was a little bit of a sales job. So I don’t know, maybe there might be a way to do it a little bit differently, so it’s every time you read the word it’s [not] highlighted.

I: So you don't have an impulse to click on it?

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8 Blue if not visited, red if have visited.
R: I don't have an impulse--no, I had exactly the opposite. I mean, after I hit it about three times I said, "I don't even want to click this thing." [laughing] [Engineering instructor, Doctoral institution]

Use icons that clearly represent sections
The participants said that the icons required some getting used to, because they needed to learn to identify the icon with its section. For instance, many did not immediately identify a "running girl" icon with an introduction to assessment. Also, those participants unfamiliar with the acronym CATs did not identify the "meowing cat" icon with classroom assessment techniques. Even though these icons were always signified by descriptive text, some participants still did not associate the icon with the topic and needed to learn this connection. The most ambiguous icon was the "home" icon, which the participants viewed as the home page for the FLAG and actually was the home page for the CL-1 team. This caused some confusion when the participants clicked on the home icon and ended up somewhere else than they expected.

I'll tell you one thing I did have a hard time with was getting back to the home screen. When I wanted to go, when I was finished going through something and I wanted to go back to the home screen, I ended up doing it by going to your email message and pasting the address back in. [Mathematics instructor, Doctoral institution]

Additionally, the participants had different reactions to the icons themselves. Some enjoyed the animation; others were turned off by what they viewed as "cutesy, k-12ish" icons.

Avoid frames
The use of frames caused problems for many of the participants. First, the participants had difficulty "backtracking" through their visit to FLAG especially if they did not use their browser's "back" button. For instance, if a participant clicked on a hyperlink that took them to a new section and then wanted to go back, clicking on the appropriate link took them to the first page of that section rather than their place in that section. To get to their starting point, they needed to use the "back" button to get to the proper place. The designers attempted to solve this problem with java-enabled navigation, but it did not work consistently.

Second, when the information on a frame did not fit on the screen (e.g., for those participants with smaller screens or low-resolution monitors), a scroll bar would appear in that frame. A number of participants missed information on a section because they did not think to, or did not see, the scroll bar and find the information that wasn't immediately visible on the screen. Thus, they missed some CATS such as Scoring Rubrics and Weekly Reports, or later sections of the "Getting Started" section. The experience of one participant appears below:

R: I guess I have a question. Like on the CATs page on the left column I see that attitude inventory, concept mapping, concept diagnostic tests, but I don’t see any other CATs listed.

I: Oh you may. I wonder if your resolution [is a problem]. Can you scroll there?

R: Oh you know what, that's it. [Mathematics instructor, Doctoral institution]

Third, the use of frames reduced the screen real estate that could be devoted to the main content area of the sections. Participants frequently commented on this, and the experience of one participant appears below:

R: I still can't read from the web very well. Especially, 'cause your window's so small.
I: Which window?

R: The window that has the goals and the CATs in them. They have an intro. window to the left, and the top window, and then the bottom window is where everything scrolls through. And it’s so small that you pretty much have to download it to be able to see all. And so, I thought it would be great if you could get rid of the other two windows and expand that window that you’re actually working in. [Biology instructor, Associate of Arts institution]

The web designer encountered significant enough difficulty with frames that he did not use them in the next site (LT-squared) that he developed for the CL-1 team.

Provide different ways to view documents: as parts or as whole

The participants enjoyed being able to view the entire CAT or Primer sections and download and print them. This enabled them to read off-screen a document that was text-heavy. The participants were very enthusiastic about this option and viewed it as a major benefit of the FLAG design. In fact, many said that they prepared for the interview by browsing the site and printing those items of interest.

Particularly I liked the part where it said "View entire technique" because that was handy for me just to be able to scroll down at that point. And I really prefer web sites that do that where you don’t have a lot of lateral linkage. [Biology instructor, Baccalaureate institution]

And after I found that out [I could read the entire document in one piece] then I did just scroll down to the bottom and do the whole thing at once because I do not like things coming in bits and pieces. You see if I have five minutes of download time, I can go off, I can get something to drink, and I can wander around for a bit while the machine downloads. But if I’m forever waiting for a minute or two, it wastes a lot of time without getting anywhere and without me being able to just sort of go off for a bit. So I like the whole thing to come in at once and then if you want to have hot links to the different sections for the people who want to jump around that’s fine. [Chemistry instructor, Master's institution]

This desire to download files (rather than read online) agrees with Yale University's style guide writers Lynch and Horton: "The best-designed reference Web sites allow users to quickly pop into the site, find what they want, and then easily print or download what they find (1999)."
Conclusion

In conclusion, the evaluation data indicates that the participants found FLAG to be of value and are using the ideas in FLAG in some way. This set of reform-receptive faculty felt that FLAG fills a need, is a valuable resource for learning about assessment techniques, and a potentially valuable resource for assessment tools. Many encouraged the CL-1 team to continue its good work and were excited about the prospect of a one-stop shop that included downloadable tools on various techniques. With respect to impact, many (73%) had used the FLAG in some way six months following their visit: 51% had recommended FLAG to a colleague, 29% had revisited FLAG, and 24% had adapted a tool or technique into their classroom. Of those who did not revisit the FLAG, only four cited difficulties with the usability of FLAG's content and most said that they were just too busy to take the time to revisit FLAG.

The interview data indicated that the participants in this evaluation were in the audience the FLAG developers seek to reach: they did teach introductory science courses; they were fairly regular users of the web; and, they were interested in using and finding new techniques in their classroom. In this respect, their reactions to and use of information in the FLAG website can be taken to be somewhat representative of the target audience. But it is not clear whether and how these faculty would experience the FLAG differently had they not been participating in this evaluation. For instance, if they encountered a problem or became bored during their visit, would they have "stuck it through" (like many did) or would they have left? This likely depends on the person and his/her degree of interest, although research on web use indicates that they would leave unless they could resolve any difficulty quickly. Also, would they have navigated the site linearly (like many did) and visited all of the sections or would they have randomly picked only those things of interest? Again, this answer isn't clear.

The participants provided many suggestions and comments regarding the design of FLAG. Most participants had initial navigation problems on the site, but many of these difficulties quickly disappeared after they had browsed the sections of the site. Their suggestions are to:

- provide as much "up-front" information as possible so users can decide whether to read further;
- provide in-line navigation links so users can read linearly with ease;
- provide only in-line links essential to the text to reduce distractions in reading;
- use icons that clearly represent sections so users can more quickly grasp structure of FLAG;
- avoid frames to reduce "screen-clutter" and because they can hide information; and,
- provide document views as parts or as whole so users can easily read or print entire documents.

By having the participants think through the possible use of a CAT, we also captured an "insider's view" of what was most important to these participants -- and possibly other faculty -- as they sought to incorporate new teaching or assessment techniques into their classrooms. We learned that they:

- often worked alone in adding innovations in their classrooms;
- wanted an honest description of an innovation that includes the "good" and the "bad;"
- wanted highly specific and detailed information (e.g., examples of syllabi that use innovation);
- wanted to know that the techniques and tools had been field-tested by their peers;
- expected to make adaptations to any technique they would decide to use; and,
- would use only those techniques that "fit" their classroom situation and time constraints.

In summary, many participants found value in FLAG's emphasis on providing an honest and detailed picture of an assessment technique, written by and for faculty. This approach allowed them to "peek into" another instructor's classroom via the CATs, to see a "proof of concept" that these techniques can be used successfully in a classroom like theirs, and to learn that others like them have used assessments into their classroom. They also expected that FLAG would be "readable" because written by peers and liked that it was web-accessible and therefore convenient.
References


Appendix A: Interview Protocol

Created by UW-Madison LEAD Center

Introduction

- Thank you for agreeing to be interviewed
- Consent form
- Interview is completely voluntary, meaning that you can stop the interview at any time.
- Interview is completely confidential
- Taping the interview
- Interview format: 30-45 minutes, open-ended.
- Participation will contribute much to the improvement of the FLAG and in further projects.

Background

In order to better understand the perspective you bring to your visit to the FLAG web site, I would like to ask you some questions about your experience in teaching your introductory courses.

1. How many years have you been teaching? How many introductory courses do you teach in a semester?

2. You have participated in <program/workshop>, which focuses on new ways of teaching in the classroom. What motivated you to participate in this program? Were there particular problems that you were trying to solve? If so, what were these problems?

3. How much thought have you given to the kinds of skills, attitudes, or knowledge that you would like your students to have at the end of your introductory courses? In other words, what kinds of goals do you have for your students? What kinds of teaching approaches do you use regularly in your courses to achieve these goals?

4. How would you characterize your role in the introductory courses that you teach? Has this changed over the years? If so, how? [PROBE: role with respect to content, role with respect to students]

5. How do you currently learn about new teaching techniques or education ideas? [PROBE: discussions with colleagues, professional organizations, local or national networks]

6. How would you characterize your department or colleagues' attitudes toward trying new teaching practices in the classroom? [e.g.: supportive or non-supportive]

FLAG (design, content)

Finally, I'd like to learn about your response to the FLAG web site, particularly with respect to your role as an instructor of introductory classes. I'd like to first concentrate on your overall reactions to the FLAG and then, if we have time, on your responses to particular sections of the FLAG. I don't expect that you have visited the entire web site, given its size, but I am interested in what you did spend time on and why you chose those topics.

Overall

1. First, how often do you use the web to search for information? How comfortable do you feel navigating most web sites?

2. How much time have you spent on the FLAG web site?
3. What is your overall response to the FLAG web site? Please explain.

4. Recall that there were five different sections on the FLAG: Getting Started, Making Goals, Classroom Assessment Techniques, Tools, and Resources. Which of these 5 places have you visited? Why did you visit those places and not the others? [PROBE: decision rule for browsing]

5. One issue that comes up frequently when looking at the usability web sites is the notion of orientation, or knowing where you are on the web site. With respect to the FLAG site, did you feel "lost" at any time? If you did, can you give examples of where you felt lost on the site?

6. Is the language used in the site clear and understandable to you? If not, can you give examples where the language was unclear? [PROBE: jargon]

Specific sections
Now I'd like to ask you about some specific sections of the FLAG, in order to better understand the ways they interested or appealed to you.

1. Classroom Assessment Techniques
   a. Visited. What CATs have you visited? What interested you about those CATs versus the others? Were they what you expected/wanted? Would you incorporate any of these into your classroom? If so, why? If not, why not? [barriers to use, usefulness of the CAT]
   b. Not visited. Can you explain why you did not visit this section? Could something be added to encourage you to visit this section? [PROBE: design, content, language]

2. Getting started
   a. Visited. What is your response to this section? Did it do what you had expected? [PROBE: does it satisfy a felt need? Was it helpful in learning about assessment? Was it helpful in orienting you to the web site? Are there design, language, content issues?]
   b. Not visited. Can you explain why you did not visit this section? Could something be added to encourage you to visit this section? [PROBE: design, content, language]

3. Matching goals to CATs
   a. Visited. What is your response to this section? Did it do what you had expected? [PROBE: does it satisfy a felt need? Was it helpful in getting to an appropriate CAT? Was it helpful in thinking about goals? Are there design, language, content issues?]
   b. Not visited. Can you explain why you did not visit this section? Could something be added to encourage you to visit this section? [PROBE: design, content, language]

4. Resources
   a. Visited. What is your response to this section? Did it do what you had expected? [PROBE: does it satisfy a felt need? Was it helpful in learning about other resources? Are there design, language, content issues?]
   b. Not visited. Can you explain why you did not visit this section? Could something be added to encourage you to visit this section? [PROBE: design, content, language]

5. Searchable Tools
a. **Has visited.** What is your response to this section? Did it do what you had expected? [PROBE: does it satisfy a felt need? Was it helpful in finding tools? Are there design, language, content issues?]

b. **Not visited.** If not, can you explain why you did not visit this section? Could something be added to encourage you to visit this section? [PROBE: design, content, language]

Final Questions
1. Has the FLAG web site influenced your teaching or attitude towards teaching in any way? If so, could please explain, giving examples? If not, are the ways it could be improved so that it could be of more service to you? Please explain.

2. Would you recommend the FLAG web site to a colleague? If so, how would you describe it to him or her? If not, why not?

3. We will be writing a report for the developers of this site based upon these interviews. This group is also developing additional web sites that area geared toward faculty like you. Is there anything else that you would like these people to know, as they improve the FLAG and develop other web sites, that we have not yet covered in the interview?

Thank your for your participation.
Appendix B: Follow-up Impact Survey

Created by the UW-Madison LEAD Center.

1. Have you been back to the FLAG web site since the interview?

Yes ___    No ___

[If you answered "No" above, skip #2 and go to #3]

2. If you have visited the FLAG since the interview, what was the purpose of this (or these) visit(s)?
(check all that apply)

___ I wanted to read more information about theory of assessment
___ I wanted to read more information about an assessment technique
___ I wanted to find ideas about assessment techniques to use in my classroom
___ I wanted to find a tool that I could quickly use in my classroom
___ I wanted to find other resources
___ Other, please explain

3. Which of the following reasons better explains why you have not visited the FLAG web site since the interview? (check all that apply)

___ I did not have a bookmark for the site or lost the URL address
___ I was too busy and I didn't get a chance to visit the site
___ None of the tools available seemed applicable for my course
___ It was not clear how one would implement the Classroom Assessment Techniques
___ I was not teaching an introductory course
___ Other, please explain

4. In what ways have you used ideas from the FLAG in your profession? (check all that apply)

___ I adapted a classroom assessment technique that I read about in the FLAG website
___ I downloaded a tool or example available on the FLAG and used it in my class
___ I presented in a workshop about the FLAG
___ I met with a group of faculty to plan the use of resources available on FLAG
___ I recommended the FLAG to a colleague
___ Other, please explain

5. Do you plan to visit the FLAG web site again?

Yes ___    No ___

If you have any comments you would like to make about FLAG please feel free to do so and write your comments in the space below. Thank you.