

On the Cutting Edge: Professional Development for Geoscience Faculty

<http://serc.carleton.edu/NAGTWorkshops/>

There seem to be primarily two different sites involved here – one hereinafter referred to as Cutting Edge New (CEN) and the other as Cutting Edge Old (CEO). CEN is the site with the look and feel of the **On the Cutting Edge Home** page (see Fig. 1 below). CEO is the site with the look and feel of the **Tsunami Visualizations** page (see Fig. 2 below).

Furthermore, there seem to be at least one, perhaps two, additional sites involved, though less prominently – the **SERC Catalog** (hereinafter referred to as SC – see Fig. 3 below) and **Teach the Earth**: the SERC portal for Geoscience Faculty (hereinafter referred to as TE – see Fig. 4 below).

Fig. 1 Cutting Edge New (CEN)

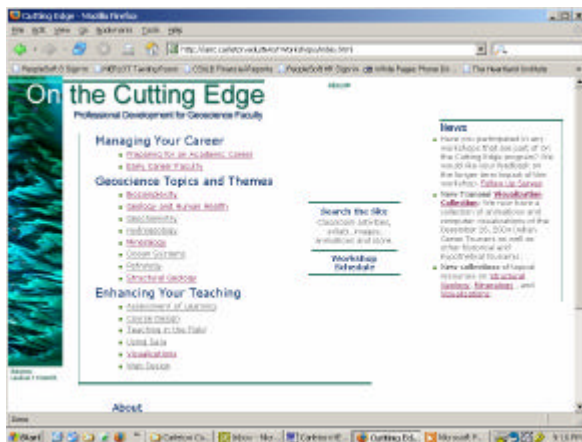


Fig. 2 Cutting Edge Old (CEO)

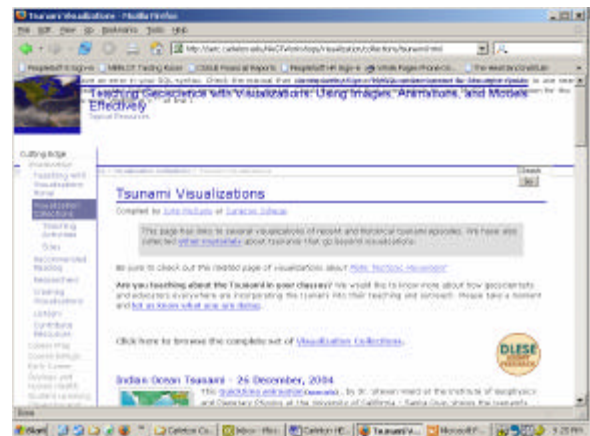
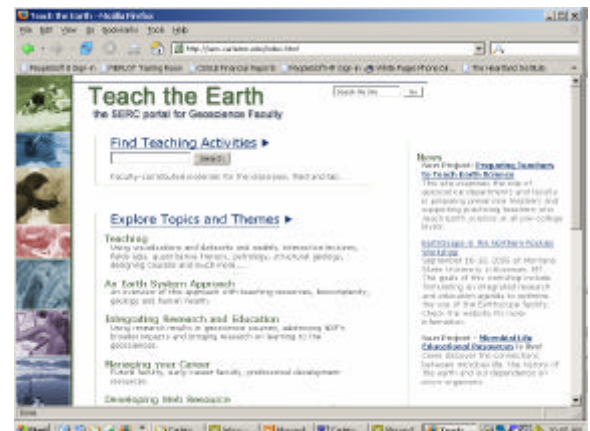


Fig. 3 SERC Catalog (SC)



Fig. 4 Teach the Earth (TE)



Home Page Issues

What's the MAIN purpose of this site? Are the topic headings on the **Home** page listed in order of importance? I.e., is **Managing Your Career** most important? Consider adding an introductory sentence or paragraph about the main purpose of the site and what users can do/find here.

Recommend making the **On the Cutting Edge** logo, in the upper left, a link to the **Home** page (except for the logo ON the **Home** page). Standard practice is to have the site's logo in the upper left of all pages take users to **Home**. Currently the **On the Cutting Edge** logo at the top left of the site's pages takes users to the **About the Project** page, while the logo to the **Home** page is at the bottom left of the site's pages (except for the **About this Project** page which has no such logo link to **Home** at the bottom).

Consider adding left navigation (hereinafter referred to as left nav) to this **Home** page to give users more navigational flexibility, some idea of what is available on the site, and how it's organized.

Since this **Home** page is essentially a list of links, give users information that helps them decide which links are relevant to them. Users need information to help them make effective choices whenever they are given a long list or variety of lists from which to choose.

Consider streamlining the page by eliminating the center **Search the Site** and **Workshop Schedule** links as follows:

- Put a short explanatory sentence at the top of the **Home** page telling users what they can find on the site (as suggested above and that includes the text currently under the **Search the Site** link).
- Give users a **Search** box on this **Home** page.
- Move **Workshop Schedule** to **News** (see recommendation below).
- Move the information currently on the **Search the Site** page as recommended in the **Individual Page Issues and Questions** section of this report.

Are the topics listed in order of importance to users in the **News** section on the **Home** page? Consider:

- Putting **Workshop Schedule** link (from the center section) first.
- Leaving the Tsunami link and information where it is.
- Eliminating the **New collections** information by labeling the links in the list under **Geoscience Topics and Themes** as **NEW!**
- Moving the survey information and its link to last.

Consider eliminating the **About** section below the [Web Design](#) link.

- The [More information about this project](#) link takes users to the same place as the **About** > link and the **On the Cutting Edge** logo do, so it could be eliminated.
- The [Other Opportunities and Resources of interest to geoscience faculty](#) link seems sufficiently important to move it up into the primary list above.

Other **Home** page issues:

- In Internet Explorer, vertical scrolling is required to view the entire **Home** page. It is better to eliminate, if possible, or at least minimize, the need to scroll on the **Home** page.
- In Internet Explorer, there are views with so much white space on the **Home** page that the bullets/headings on the far right are lost.
- In addition to a **Search** box, consider adding **Contact Us** and **Site Map** links to the **Home** page.
- Consider adding a set of links (to the parts of the site that are most important to users) across the bottom of each page in CEN. This should probably include the **Contact Us** and **Site Map** and should appear consistently throughout the site.

Navigation Issues:

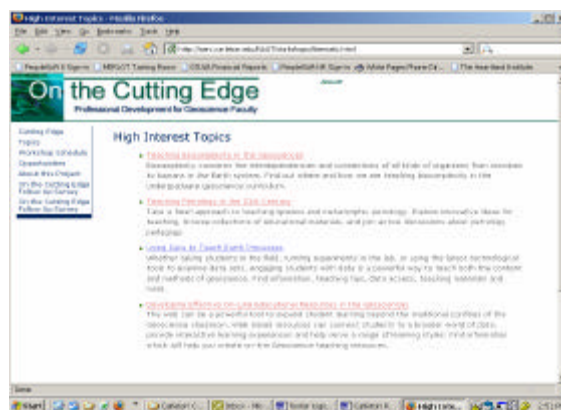
Good that **Back** always works

Good when left nav highlights the page users are on. But it needs to do so consistently. For example, on the Course Design > Course Goals/Syllabus Database page, users who click on [Modeling in the Context of Watershed Hydrology](#) (second link in the list) get a page without any left nav clues as to where they are (see Fig. 5 below). And where are the navigational cues for Fig. 6?

Fig. 5 Which left nav topic am I on?



Fig. 6 Where am I? How did I get here? How will I find it again?



The breadcrumb is very helpful. But it's not always complete, as when a link takes users to a page within a sub-menu and the breadcrumb omits the previous higher level. For example, users on the **Early Career Geoscience Faculty** page see a breadcrumb that says, Cutting Edge > Early Career Geoscience Faculty, rather than the complete path which is, Cutting Edge > Early Career > Early Career Geoscience Faculty (see Fig. 7 below).

Why is the **On the Cutting Edge Follow Up Survey** listed twice in the CEN left nav? See Fig. 8 below.

Fig 7. Incomplete breadcrumb

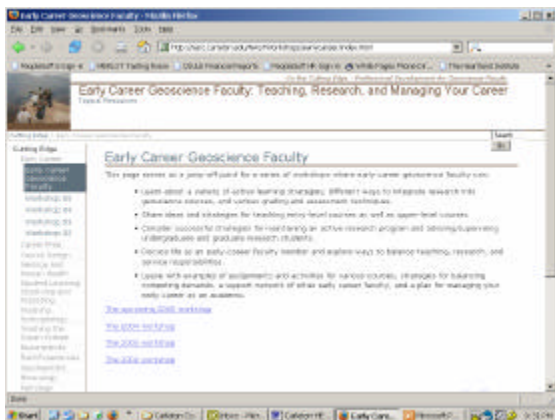


Fig. 8 Survey in CEN left nav



On the CEO, having the section users are on come to the top of the left nav list is not what users expect. It can be confusing and disorienting and makes it impossible to run quickly through the list. The order of the items in the left nav list should remain the same, and the page users are on should be highlighted in some way.

It is also confusing to have new left nav sub-menus open up as users navigate through the topics, and to have higher levels of the left nav menu disappear when users click within a sub-menu. See figures 9-12 below.

Fig 9. **Before You Begin**

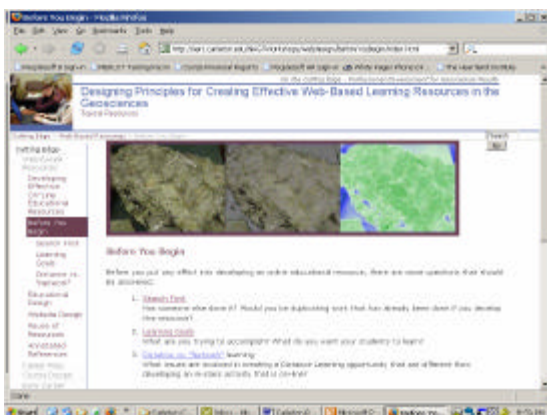


Fig. 10 Sub-topic **Learning Goals**

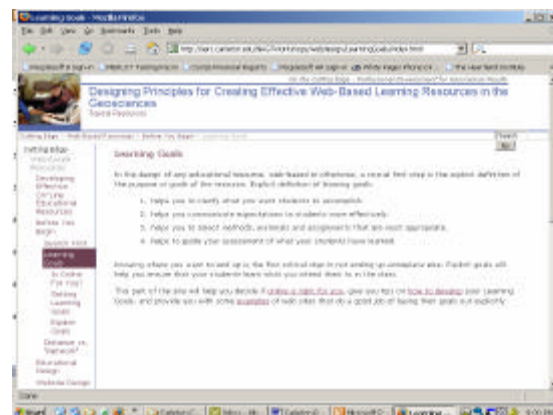


Fig 11. Sub-sub-topic **Explicit Goals**

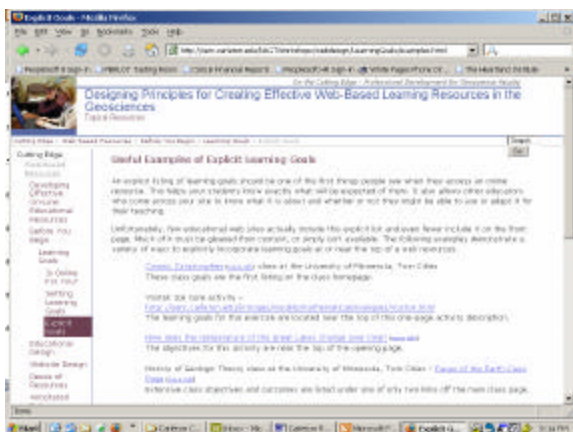


Fig. 12 Sub-topic **Distance vs. "Network"**



Notice the placement of the **Educational Design** link in each of these figures. For example, at **Explicit Goals** (Fig. 11), the next topic in the left nav is **Educational Design**. But what happened to Distance vs. "Network" (see Fig. 10)? And **Educational Design** is now at least two left nav topics away (Fig. 12).

The use and function of **Next Page** and **Previous Page** need to be consistent. When do users get them and when not? Are they only available in certain sections? How far do they take users? Can users move only through each individual section or can they move through all sections? Are they used and do they work the same way in CEO and CEN? For example:

- Users can use **Previous** and **Next** to navigate through the CEO section **Web-Based Resources** but it ends at **Annotated References**.
- CEO **Geology and Human Health's** first page has no **Next**. Neither does subtopic **2004 Workshop**, and it's not the end of the section.
- CEN **Topics** page **Next** takes users to **Workshops**, and **Previous** takes them to **Home** (i.e., moves users through left nav top level topics). With a list like this (covering several pages), **Next** and **Previous** should be reserved for navigating through the list rather than through the left nav topics.
- At CEO **Web-Based Resources**, **Explicit Goals**, the next topic in the left nav is **Educational Design**. **Next Page** has been moving users through the left nav menu. When users now click **Next Page**, they see **Distance vs. "Network"** in the left nav with a page titled, **Issues for Distance Learning** (see figures 9-12 above).
- CEN **Workshop Schedule** has no **Next** and **Previous**.
- CEN **About this Project** has no **Next** and **Previous**.

Links Issues

All links should be underlined and only links should be underlined. Color alone should not be used to designate links (or any other important information or features) because it can cause problems for low vision and color blind users. For example:

- The **About** > link at the top of the **Home** page is a link that isn't obvious.
- The CEO > **Show me the plan** link ([Cutting Edge](#) > [Web-Based Resources](#) > [Website Design](#) > Writing Web Pages) is distinguished by color, the arrow, and interpretation of the text, but not underlined.
- The **Search this Site** and **Workshop schedule** links on the **Home** page are bold and not underlined while the **Visualization Collection** link under **News** is bold and underlined.

There shouldn't be any active links **ON** the page users are on **TO** the page users are on. Such links should be grayed out or inactive.

Link titles should be descriptive for screen readers. For example:

- The **About** > link at the top of the **Home** page should say, [About this Project](#), or [Learn more about our project](#), or something similar.
- CEN [Click here](#) should be [Click here for a complete list of new workshops](#)
- CEN [More information](#) should be [More information about our project](#)
- CEO **Show me the plan** link ([Cutting Edge](#) > [Web-Based Resources](#) > [Website Design](#) > Writing Web Pages) should be something such as, [Show me the plan for creating my first course web site](#) (page?).

Page titles need to match link titles and vice versa. For example:

- CEN **Search the Site** link = page with no title.
- CEN **Workshop Schedule** link = **2004-2005 Workshops** page title.
- CEO left nav link **Setting Learning Goals** = **How Do I Create Learning Goals?** page title.
- CEO left nav link **Aspects of Learning** = **Distance Learning Educational Issues** page title.
- CEO link **Explicit Goals** = **Useful Examples of Explicit Learning Goals** page title. Recommend link say **Explicit Learning Goals** and page say **Explicit Learning Goals – Some Useful Examples**.
- CEO left nav link **Educational Design** = **Designing the Educational Content of a Web-Based Resource** page title. Recommend changing page title to, **Educational Design: Designing the Educational Content of a Web-Based Resource**.

The use of non-standard text, link, and visited link colors is an issue on this site. Some text colors are already more difficult for low vision and color blind users to see. For links that are distinguished from ordinary text only by color, some choices of link colors are very difficult to distinguish from the regular text. For example, text color and link color in the first bulleted item under **News** on the **Home** page. See also figures 13 and 14 below and color information provided under **Look and Feel Issues**.

Fig. 13 Text and left nav colors 1



Fig. 14 Text and left nav colors 2



The CEN [More information](#) link = **About** > = **On the Cutting Edge** logo = CEN **About this Project** left nav link, and they all take users to the **About this Project** page. Redundancy is good, but it should be used to get users to the information they consider most important. How important to users is information about the project? Is it the main reason they'll be coming to the site?

Related Links boxes (see Fig. 15 below)

[on pages such as the page entitled, **Observing and Assessing Student Learning**, where **Home** is highlighted in the left nav under **Student Learning: Observing and Assessing**, where the breadcrumb says, [Cutting Edge](#) > Home, and the page header is:

Understanding What Our Geoscience Students Are Learning: Observing and Assessing Topical Resources]

- How are the links in the box related to the subject matter on the page?
- Why should users click on these links?
- How important is it for users to know about these links? So important that they couldn't be incorporated into the page under a heading, **Related Links**, that includes some explanation on why users might consider going there?

Fig. 15 **Related links** box

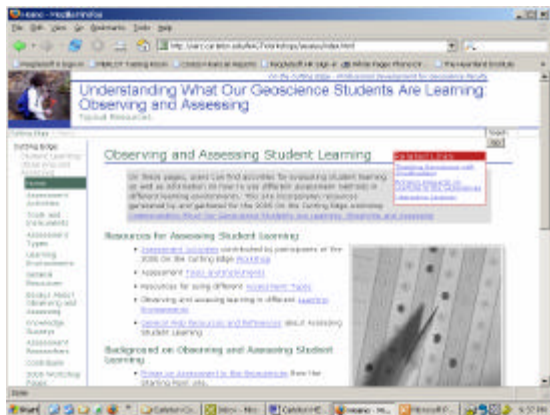


Fig. 16 "Course Type" box



The boxes (see Fig 16 above and figures 17-20 below) that appear on the pages that look like **Search** results pages (even though no **Search** was conducted to get there) and whose function appears to be to facilitate "browsing" are formatted inconsistently. Recommend:

- Using the same colors for individual headings (e.g., **Topics** always in blue, **Resources** always in green).
- Arranging the headings in the same order on separate pages (e.g., **Topics** first, **Resources** second, and **Applications** third).
- Wording the text consistently across pages (e.g., Topics: [subject], Resources by Type, and Applications: [subject]).

Fig. 17 CEN boxes



Fig. 18 CEO boxes Example 1

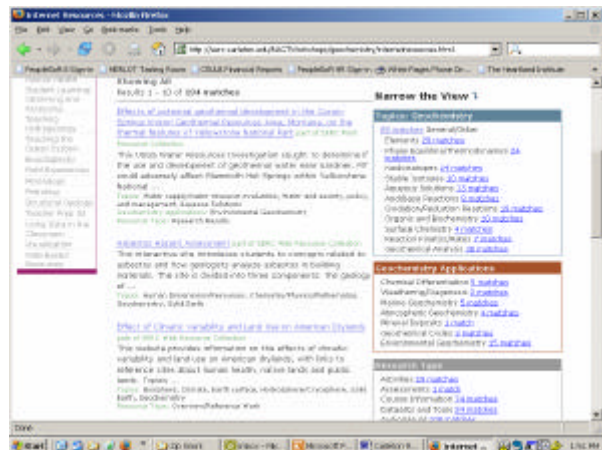


Fig. 19 CEO boxes Example 2



Fig. 20 CEO boxes Example 3



Search/Browse Issues:

There is no **Search** box on the CEN **Topics** page.

Recommend making the **Search** box on all pages larger and more prominent, thus easier to find, see, and use. There appears to be enough room on the pages unless there is some other, more compelling reason not to.

Do the two **Search** boxes on the page users get when they click on the **Home** page **Search the Site** link (the page that has no title) do the same thing? If yes, consider eliminating one and keeping the one that is in the same place on all the other pages (except for the current **Home** page where it needs to be added).

What does the **Search** box search? The CEO? The CEN? SC? TE? All of the above? Users need to know (it should be clear) what part(s) of the site or sites is/are being searched.

Consider giving users an **Advanced Search** option to allow them to refine their searches on a site this size and of this complexity.

Users might be confused when they get **Search** results pages when they didn't conduct a **Search**, such as when they click on a CEO subject (such as **Hydrology** or **Geochemistry**) and then click on **Teaching Activities** or **Activities and Assignments**. Questions about these pages include:

- Why are users taken to **Search** results pages when they didn't search for anything?
- What exactly was searched?
- The pages display number of matches, but matches to what?

Recommend only giving users **Search** results if and when they've initiated a **Search**. If that's not possible, recommend warning users when a **Search** they didn't initiate (or didn't know they initiated) is being conducted.

In those instances where no **Search** has been conducted, recommend presenting lists of items/activities without any reference to **Search** terms such as "search", "results", or "matches" and in a format that in no way resembles **Search** results.

Look and Feel Issues:

There are at least four separate and distinct looks and feels:

- CEN
- CEO
- SC
- TE

And within the CEN pages, the "search results" pages have a slightly different look and feel. There really should be one consistent look and feel for the entire site.

On the other hand, if there are really three or four different interconnected sites, each needs to have a more distinct and recognizable look and feel so users don't/can't get confused about which site they're on. Each separate site should be devoted to **one** particular topic or aspect of the totality.

For example, the SERC Catalog could be devoted entirely to Search and Browse functions across the three subject sites – CEN, CEO, and Teaching the Earth. Then the CEN site could be devoted strictly to Career Development, the CEO site to Geoscience topics, and the Teaching the Earth site to topics about **teaching** Geoscience.

Are the colors for the CEO page headers and page titles taken from the pictures used for the topics/subjects? And were the page title colors chosen to match the left nav highlighting color or vice versa? The caution is to avoid text colors that make it difficult for low vision and color blind readers to see and non-standard link and visited link colors. For more information about the use of color on the web, see:

http://www.lighthouse.org/color_contrast.htm.

CEO **Assessment** and **Teaching in the Field** pages have the same header picture and color scheme. Is that a mistake? This is an example of how consistency can be confusing. Users have come to expect a different color scheme for each of the topics/subjects.

Functionality Issues:

The pink slide-out banner about the survey (see figures 21 and 22 below) is problematic.

- Users have no direct/visible way to make it disappear without clicking on it. The option to opt out of taking the survey (“I would rather not answer...”) requires users to click on the pink banner.
- Users should be given an option to get rid of the banner without having to click on it first to opt out.
- After users click on the “I would rather not answer...” option, the banner seems to disappear permanently. But what happens when users who have opted out return to the site? Will the banner be back? And what happens if they just want to take it later?
- For users who don’t opt out, the banner seems to reappear randomly.
- Even after users take the survey then return to the site, the banner reappears. This shouldn’t happen.

Fig. 21 CEN pink banner

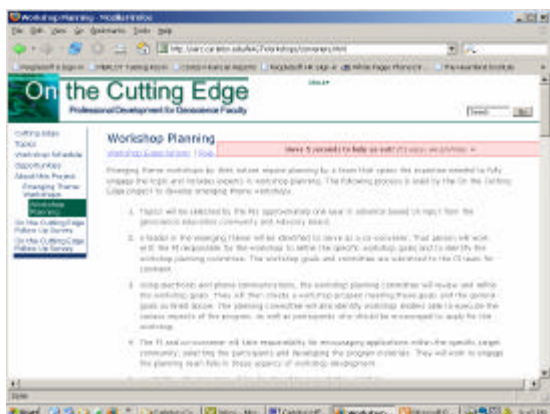
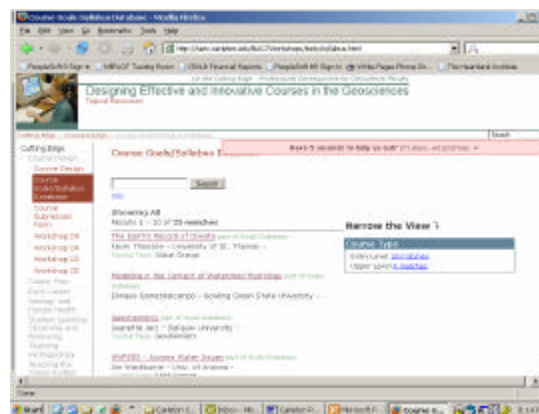


Fig. 22 CEO pink banner



The CEN **About** > link and the **On the Cutting Edge** logo don’t work on the CEN **Topics** page.

Why not give users all the URLs that accompany links? They show up when users print out the page. For example, the text on the CEN **Opportunities** page that has no title, under **Workshops**, could be formatted:

- [Chautauqua Short Courses](http://www.engr.pitt.edu/chautauqua/geology.html)
(<http://www.engr.pitt.edu/chautauqua/geology.html>)
This is an annual series of forums in which scholars at the frontiers of various sciences meet intensively for several days with undergraduate college teachers of science. The primary aim is to enable undergraduate teachers in the sciences to keep their teaching current with respect to both content and pedagogy.

And under **Online** (rather than On-Line) **Resources**:

- [Project Kaleidoscope](http://www.pkal.org) (<http://www.pkal.org>) is an informal alliance working to build strong learning environments for undergraduate students in mathematics, engineering and the various fields of science. This website provides essays and other information about what works, on going activities, and people and networks.
- [Starting Point](http://serc.carleton.edu/introgeo/index.html) (<http://serc.carleton.edu/introgeo/index.html>) focuses specifically on entry-level geoscience courses providing information about teaching methods, ideas for course design, and ready-to-use examples of things you can do in your course.
- [Science Education Resource Center](http://serc.carleton.edu/index.html) (<http://serc.carleton.edu/index.html>) provides several sites aimed at geoscience faculty including Using Data in the Classroom, Bringing Research on Learning to the Geosciences, and the Earth Exploration Toolkit.
- [DLESE](http://dlese.org) (<http://dlese.org>) provides searchable access to a wide variety of resources of interest to geoscience faculty.

And under **Professional Societies**, consider adding a short phrase or paragraph about each organization as well as providing (revealing) the URL.

Text Issues

CEO [Cutting Edge](#) > [Web-Based Resources](#) > [Before You Begin](#) > [Learning Goals](#) > Is Online For You? takes users to a page that says, ***Is Online For You.***

Some places on the site use “online” and some use “on-line”. It should be consistent throughout the site (recommend using ***online***).

In the CEO page header, ***Using Data to Teach Earth Processes***, “processes” is misspelled.

Contact information is formatted at least four ways in CEO:

- At [Cutting Edge](#) > [Visualization](#) > [Teaching with Visualizations: AGU 04](#) > Contact Us, the contact information says, Cathy Manduca, Carleton College (cmanduca at carleton.edu) – No links
- At [Cutting Edge](#) > [Teacher Prep 03](#) > Contact, the contact information says, For more information regarding this workshop, please contact [Cathy Manduca](#)
- At [Cutting Edge](#) > [Web-Based Resources](#) > [Workshop 03](#) > Contact Information, the contact information says, Cathy Manduca, Carleton College (cmanduca@carleton.edu)
- [Cutting Edge](#) > [Using Data in the Classroom](#) > [Workshop 02](#) > Contact Information, the contact information says, [Cathy Manduca, Carleton College](#)

Despite the differences in format, all links open an email to Cathy. Recommend formatting all contact information consistently throughout the site and using the format: Cathy Manduca, Carleton College (cmanduca@carleton.edu). If the person's name is a link, it should be to biographical information about the person (or to the person's web site). If the college name is a link, it should be to the college's Home page. Only the person's email address should open an email message box.

Individual Page Issues and Questions:

CEN **Search the Site** page (the page users get when they click on the **Search the Site** link on the **Home** page):

Since the **Search the Site** page has no title, no left nav cues as to where users are, and no way to get to it except from the **Home** page, and since there is no explanation here as to what the lists on the page are for, what they do, or how they are related to anything else on the site, consider eliminating the page as follows:

- Moving the Topics list (blue heading) to the **Topics** page users get when they click on the CEN left nav **Topics** link – the page currently entitled, **Topical Resources drawn from Cutting Edge workshops**. Doing so will require the page to be renamed to reflect the information that can be found there. See also *CEN **Topics** page below.
- Moving the **Resource Type** list (green heading) to the **Opportunities** page users get when they click on the CEN left nav **Opportunities** link – the page that currently has no title. Title the page, **Opportunities and Resources** (or **Other Opportunities and Resources**), and re-title the **Resource Type** list, **Resources for Teaching Geoscience by Type** or something similar.

If you don't eliminate it, consider:

- Changing the link on the **Home** page to **Search or Browse the Site**.
- Titling the page **Search or Browse the Site**.
- Adding **Search or Browse the Site** to the left nav.
- Adding a subheading above the two lists called something such as **Browse the Site** or changing the two list titles to **Browse by Topic** and **Browse by Resource Type**.

*CEN **Topics** page (the page titled **Topical Resources drawn from Cutting Edge workshops**):

- What is the purpose of this page? For example, is it to help locate specific topics in teaching?
- Is its purpose different from the links under the **Topics** heading on the untitled **Search the Site** page?

- Is its functionality different from the Topics list on the **Search the Site** page? In what way(s)?
- Consider adding an introductory paragraph or sentence telling users what they can find here and how it works.

CEO **Teaching in the Field** page:

[the page users get when they click on the [Teaching in the Field](#) link on the **Home** page, that is entitled **Using Field Observations and Field Experiences to Teach Geoscience**, and where the breadcrumb says, Cutting Edge > Overview]

- The [searchable set of posters](#) link takes users to a page with no title (except the header) and where left nav says **Browse Field Experiences**.
- It has a **Related Links** box with two items (see Fig. 23 below – the first has a P in Point and the second a small p) that both take users to a site that has the look and feel of the CEO, but is apparently a completely separate site. (Why isn't it part of CEN? It looks sufficiently relevant.)
- There is a link on the page, [Submit an abstract for Session T124](#), that clearly states the deadline as July 13, 2004 but the link is still active (see Fig. 24 below). Why?
- There are 3 links (one in the left nav and two in the text) to a submission form that is currently irrelevant. Why?

Fig. 23 **Teaching in the Field** page

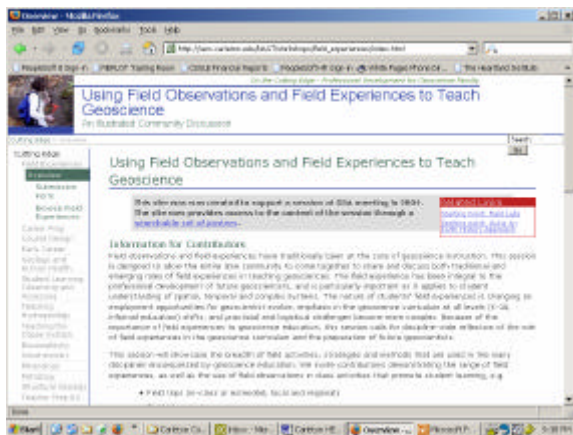
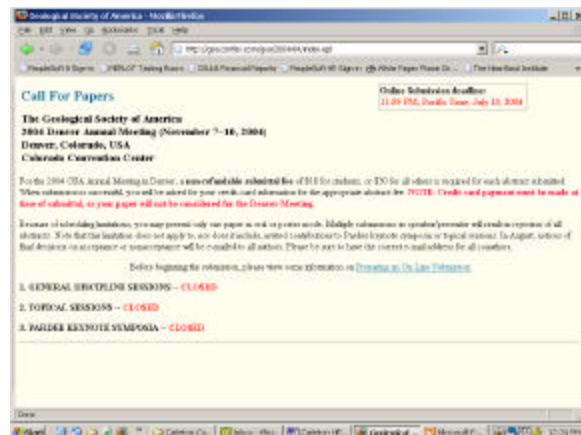


Fig. 24 Obsolete information



The CEN **2004-2005 Workshops** page (the page users get when they click on the **Workshop Schedule** link on the **Home** page) has a heading **Related Activities**. To what are they related? The workshops? Something else?

Web Design Guidelines Specific to *On the Cutting Edge*

1. **Follow Web conventions**, i.e., do what users have come to expect. For example, all links should be underlined and only links should be underlined.
2. **Design for Web Accessibility** (ADA) whenever possible. Making your web site ADA compliant makes it more usable and accessible for everyone. For example:
 - **Make link titles descriptive** for screen readers – e.g., Click here for a complete list of new workshops rather than just Click here or More information about our project rather than More information.
 - **Don't use color alone to designate important information or features** (can cause problems for low vision and color blind users). For example, it is better to highlight required fields using asterisks or some other symbol. It is better to underline links (it is also what users expect) than to set them apart using color.
3. Put your name and logo on all pages. **Make your logo a link to your Home page** (except for the logo ON the Home page).
4. **KISS (Keep it short and simple)**. For example:
 - **Facilitate scanning**. Minimize text. Break up large blocks of text with formatting and graphics. Consider linking to other pages that cover the sub-heading topics in the original text.
 - Write straightforward, simple, and concise page and link titles, and **make sure the title of the link is the same as the title of the page to which it links** insofar as possible.
 - Link users **directly** to the information they want/need whenever possible. When not possible, minimize the number of links users have to click to get where they want/need to go.
5. **Be consistent in:**
 - The "look and feel" of the interface.
 - Function and appearance – All objects should be in the same spot on all screens, and should have the same design, format, and color.
 - Text characteristics and formatting.
 - Navigation
 - The use of labels, titles, headers, footers, and graphics/icons.

General Web Design Guidelines

1. **Follow Web conventions**, i.e., do what users have come to expect.
2. **Design for Web Accessibility** (ADA) whenever possible. Making your web site ADA compliant makes it more usable and accessible for everyone. For example:
 - **Make link titles descriptive** for screen readers – e.g., Click here for a complete list of new workshops rather than just Click here or More information about our project rather than More information.
 - **Don't use color alone to designate important information or features** (can cause problems for low vision and color blind users). For example, it is better to highlight required fields using asterisks or some other symbol. It is better to underline links (it is also what users expect) than to set them apart using color.
3. **Make sure the Back button always works** – that is, don't ever disconnect users from Back. Don't force them to close any windows to get back to a previous page. This means don't open new browser windows in an attempt to keep users on your site.
4. **Put your name and logo on all pages**. Make the logo a link to your Home page (except for the logo ON the Home page).
5. **Minimize** the need for **scrolling** especially on first pages. Avoid horizontal scrolling altogether.
6. **KISS (Keep it short and simple)**. For example:
 - **Facilitate scanning**. Minimize text. Break up large blocks of text with formatting and graphics. Consider linking to other pages that cover the sub-heading topics in the original text.
 - Write straightforward, simple, and concise page and link titles, and make sure the title of the link is the same as the title of the page to which it links insofar as possible.
 - Link users **directly** to the information they want/need whenever possible. When not possible, minimize the number of links users have to click to get where they want/need to go.
7. Anticipate user errors and **design for error prevention**.
8. **Minimize download times** (by minimizing file sizes) or give users realistic estimates of how long they might have to wait.
9. **Provide a search function** if your site has more than 100 pages.
10. **Sacrifice for Usability**. Given the choice between cute, clever, hip, or flashy and usable, choose usable.

Functionality Guidelines

Aspects of the Software that Enable or Disable Users

(Nielson 1993)

1. **Visibility of system status:** Users should always know where they are and what's going on. For example, provide some sort of standard status bar when users have to wait for something to download. Make sure any graphic used as a link also appears on the target site to let users know they are "in the right place". The graphic can be a different size on the target page, but should be exactly the same image.
2. **Real world – system match:** The system should mirror the real world of users as much as possible. Use language, concepts, icons, etc. that are familiar to users. Order the processes/screens in a way that is meaningful and logical to users.
3. **Control and freedom:** Don't "trap" users. Support clearly marked exit, undo, and redo type functions.
4. **Consistency and standards:** Use objects and phrases consistently (see Consistency Guidelines that follow). Follow platform conventions.
5. **Recognition rather than recall:** Provide visible objects, actions, and options to assist users with navigation and input activities. For example, instructions, especially lengthy complicated ones, need to be visible as users complete the task(s). When the instructions can't be visible to guide users through the required steps, users should be warned to print them out before proceeding.
6. **Flexibility and efficiency of use:** Allow users to customize frequent actions whenever possible. Accelerators (unseen by novice users) can speed up interaction for expert users.
7. **Aesthetic and minimalist design:** Visibility of rarely needed information should be avoided. The more information that appears on the screen, the less visible each unit of information becomes.
8. **Online help and additional documentation:** Though a well designed system can be used without documentation and help, supplemental information may still be necessary. Keep this information tied to user tasks, support easy to use search functions, and don't make this section too large.
9. **Effective error handling:** Help users recognize, diagnose, and recover from errors.

10. **Error prevention:** Design to help users avoid making errors. A design that prevents errors is better than a good error message.

Consistency Guidelines

1. **Interface** – The "look and feel" of the interface should be consistent. Every screen should be recognizable as your product. For example, a common background and/or color scheme for all screens, common screen layouts, and your name and logo on all pages. Make the logo a link to your Home page (except for the logo ON the Home page).
2. **Conventions** – Conventions familiar to users should be employed and in a consistent manner throughout the interface. For example, all links should be underlined and only links should be underlined. All visited links should change color.
3. **Function/Appearance** – All objects that function alike should appear the same. All objects that appear the same, should function alike. For example, Help, Exit, and Search objects should be in the same spot on all screens, and should have the same design, format, and color.
4. **Text Characteristics** – Text characteristics should be constant from screen to screen. For example, all chapter titles should have the same text format (e.g., Ariel 14 point bold italic).
5. **Semantic Characteristics** – Metaphors and icons should be used consistently throughout the interface. For example, a magnifying glass that means "More Information" should represent "More Information" on every screen.
6. **Navigation** – Navigation objects and steps should be consistent throughout the interface. Screens should be linked consistently. For example, the use of next/forward buttons, "hot" words/links/buttons, and cue cards all need to be checked to make sure they work consistently throughout the interface.
7. **Interaction Tools** – Interaction tools such as mouse pointers, touch screens, and joysticks need to function in a consistent manner
8. **Screen Configuration(s)** – All related items on the screen should be grouped together visually in a format that makes sense to users.
9. **Labels and Icons** – All button labels, button icons, pull-down menus, and title bars should be used consistently throughout the interface.