THE SHIBBOLETH ADVANTAGE: CONTENT MANAGEMENT AND PRIVACY WORKING TOGETHER

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How can content providers and groups of users work together toward **seamless authentication, single sign-on, and user-based customization of online content without compromising user privacy**? In particular, how can they achieve this goal without understanding what the previous sentence means?

Shibboleth is middleware (software) that allows users from participating communities to obtain access to protected and/or personalized content anywhere on the Web - and it is being used increasingly by the National Science Digital Library and its related resources.

Join us on a pictorial field trip to understanding Shibboleth's implications as we take you through a very familiar "Brick & Mortar" example of authentication, authorization, and customization. Then follow along the "Digital" path to see how Shibboleth provides similar - often superior - services in the online realm.

At 8am, students arrive at their respective schools, but a couple of students are out sick today. Too bad they won't be able to go on the field trip! Both the Blue and the Red schools have planned trips to the museum, the aquarium, and the botanical gardens. There will be some general education, and then each institution has age-appropriate tours planned for the different grade levels visiting today.

Help the students navigate through both the "Brick & Mortar" and the "Digital" field trips by placing each group in the appropriate places throughout the day's activities.

Students arrive at their respective schools. Today's assignment is to visit three websites for some general science education. Then the sixth graders are going to study volcanoes while the eighth graders learn about global warming.
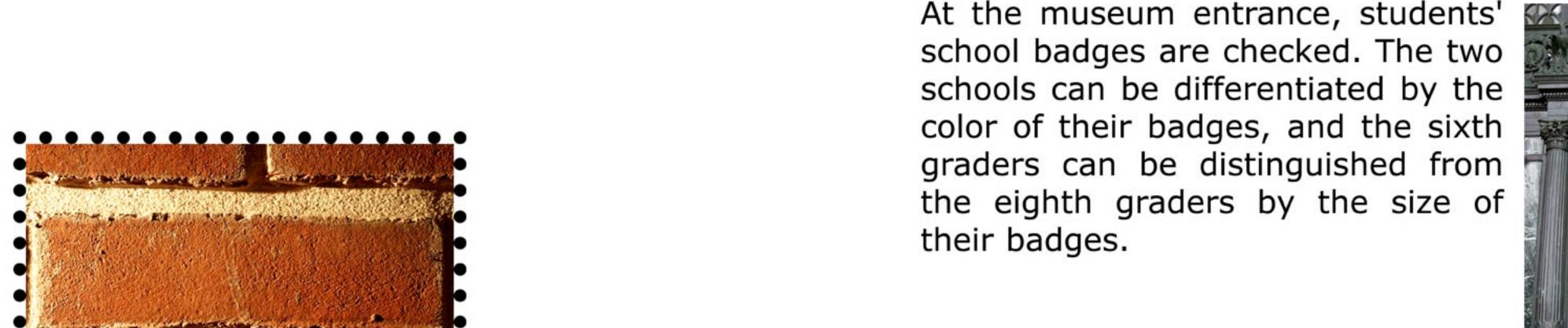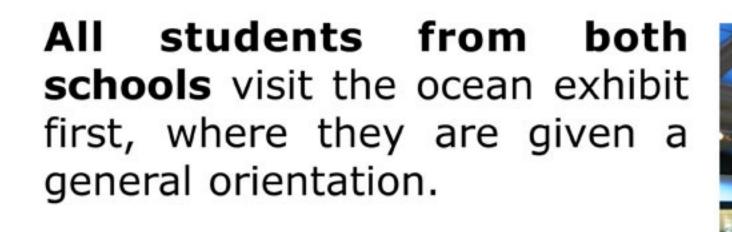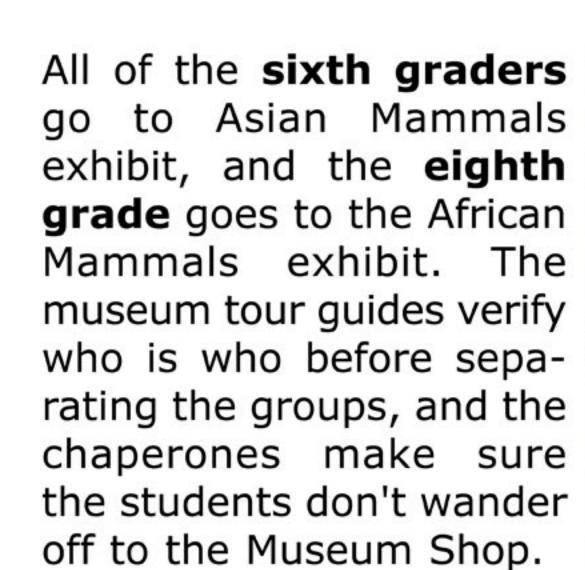
Luckily for a couple of students home sick; they can use their Internet connections and school logins at home to complete the day's work. Students not finished today can also use their home Internet connections. The school is not reliant on a specific time or place to teach the lesson.

Shibboleth allows authorized users into private areas by checking credentials without compromising personal information, just as a museum guard checks a student's school badge and, without knowing exactly who that student is, verifies that he or she is permitted to enter a particular area. Shibboleth can also guide users through the most appropriate areas of a website, just as an aquarium tour guide leads students to relevant exhibits, separating the sixth graders from the eighth graders based on their displayed credentials.

Additionally, Shibboleth provides services that the physical world cannot support: allowing students to access materials anytime, from anywhere on the Web. It allows users to access multiple sites with a single login, while students would have to continually offer their school badges (their credentials) throughout the day in this "Brick & Mortar" example.

In the "Brick & Mortar" example allowing these students to meet, diverge, and meet again throughout the day would take significant administrative coordination by each school and each visited institution. In the "Digital" example, Shibboleth is able to simplify the process greatly.

As more NSDL content providers implement Shibboleth, NSDL will become a better, more seamless resource for students. It will help make for an incredible virtual field trip!

At the museum entrance, students' school badges are checked. The two schools can be differentiated by the color of their badges, and the sixth graders can be distinguished from the eighth graders by the size of their badges.

All students from both schools visit the ocean exhibit first, where they are given a general orientation.

All of the **sixth graders** go to Asian Mammals exhibit, and the **eighth grade** goes to the African Mammals exhibit. The museum tour guides verify who is who before separating the groups, and the chaperones make sure the students don't wander off to the Museum Shop.

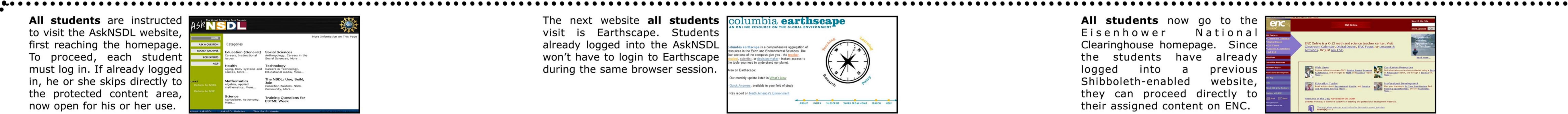**All students** are instructed to visit the AskNSDL website, first reaching the homepage. To proceed, each student must log in. If already logged in, he or she skips directly to the protected content area, now open for his or her use.
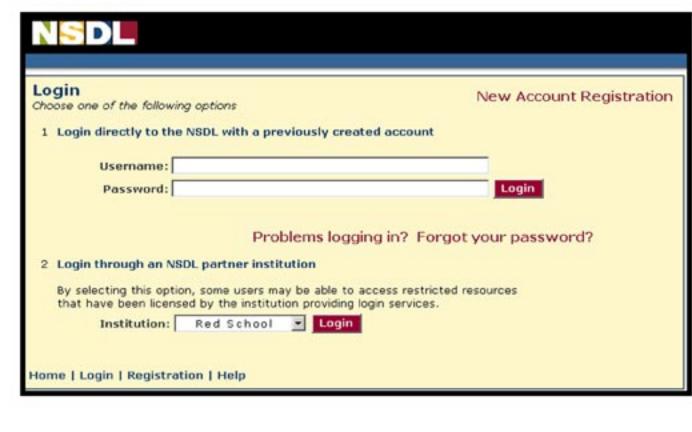
Students not yet logged will reach a webpage that asks "Where are you from?" The WAYF lists the affiliated schools, including the Red School and the Blue School.
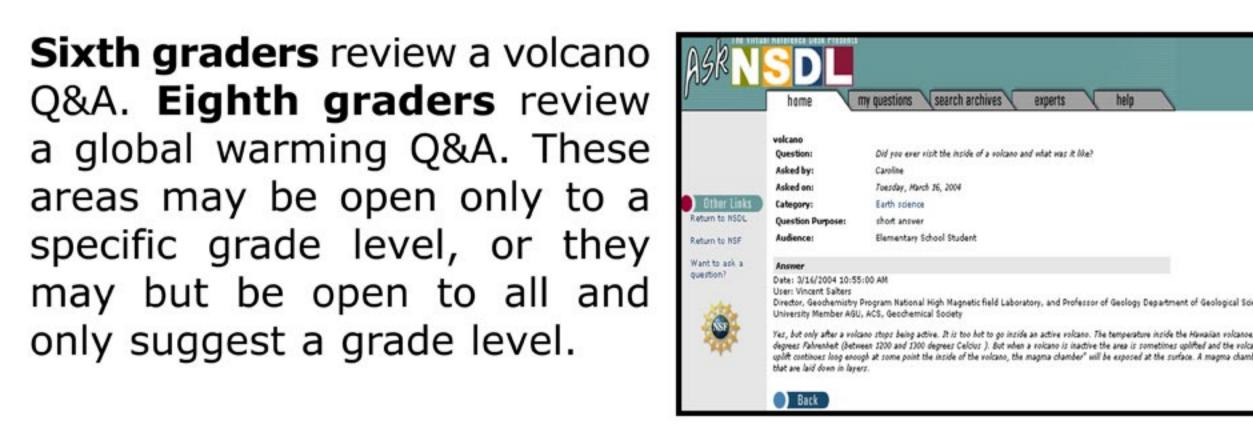

Students are directed to their school login pages. No personal information is passed to AskNSDL; just non-personal data such as school name and grade level.

The first page of protected content will provide a general overview for **both the sixth and the eighth graders**, just like the museum orientation above.

Sixth graders review a volcano Q&A. **Eighth graders** review a global warming Q&A. These areas may be open only to a specific grade level, or they may but be open to all and only suggest a grade level.

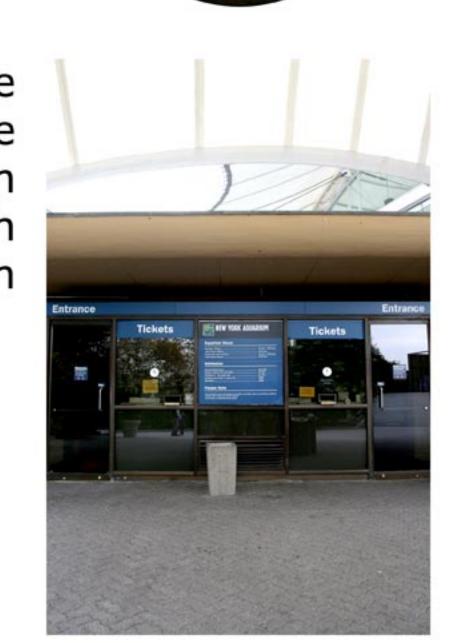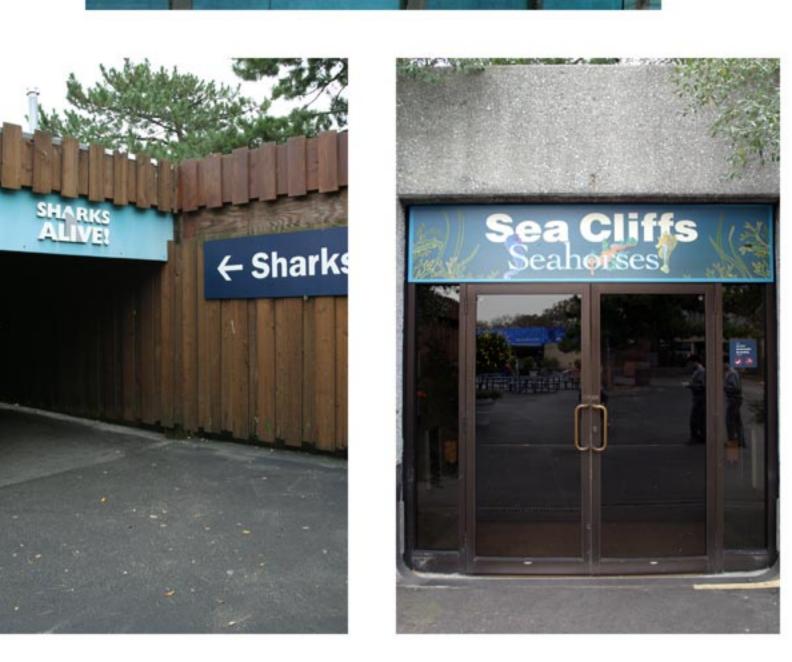
At the aquarium entrance, the students' school badges are checked again so that the aquarium staff can distinguish the sixth graders and eighth graders from each school.
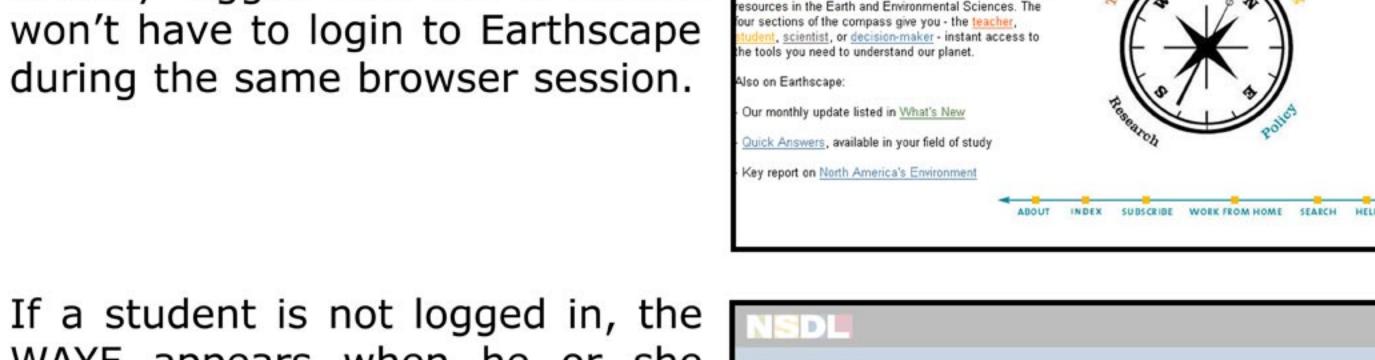

First, **all students** join the sea lions for some lunch.
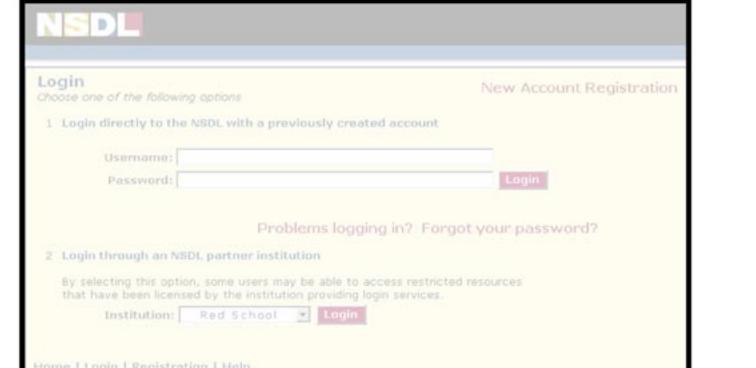

The **sixth graders** go to see the sharks, and the **eighth grade** visits the Sea Cliffs exhibit. The aquarium guides verify who is who before separating the groups, and the chaperones make sure the students stay with their group.
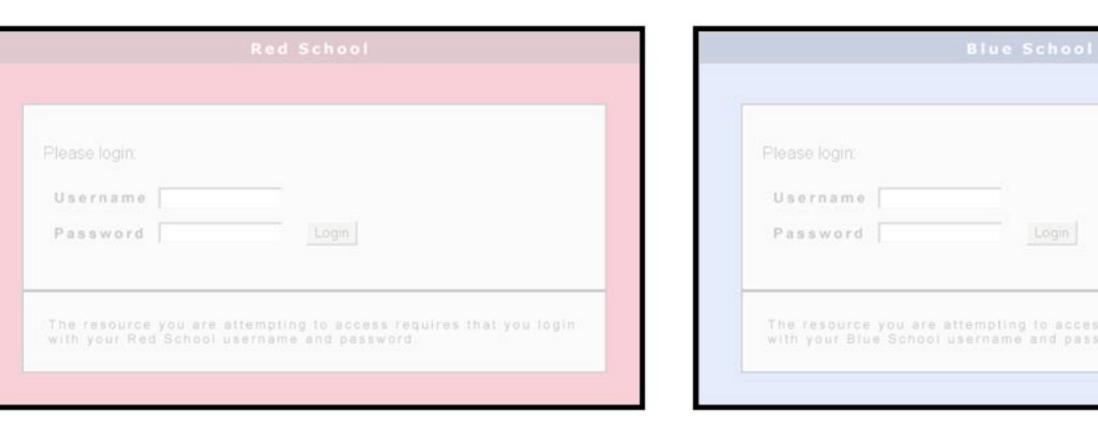

The next website **all students** visit is Earthscape. Students already logged into the AskNSDL won't have to login to Earthscape during the same browser session.
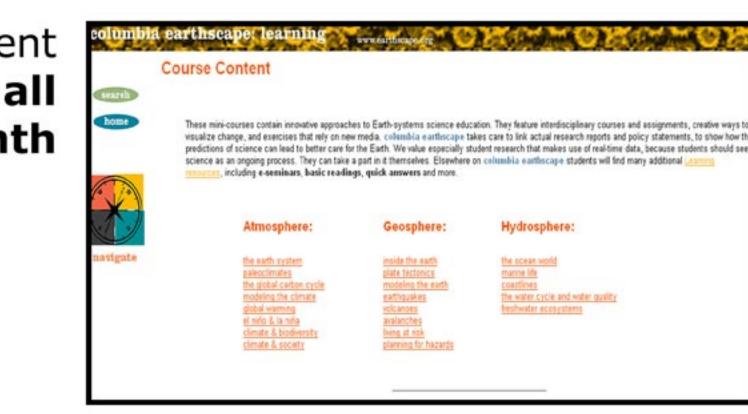

If a student is not logged in, the WAYF appears when he or she tries to access the next page.
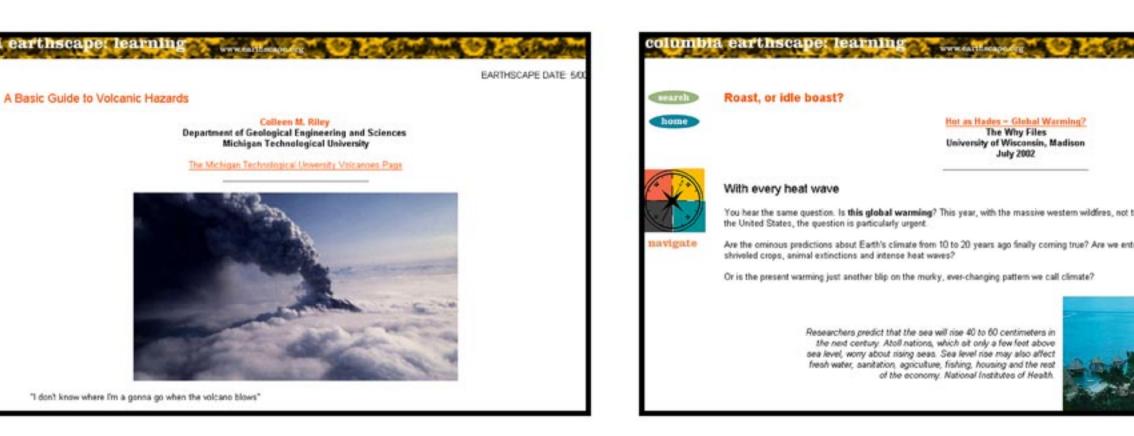

Students not logged in do so here for single sign-on access to other Shibboleth enabled websites visited.

The first page of protected content is in an area appropriate for **all users in the sixth and eighth grades**.

Sixth graders read about volcanoes and **eighth graders** read about global warming.

At the botanical gardens, the students' school badges are checked again so that the garden staff can distinguish the sixth graders and eighth graders from each school.
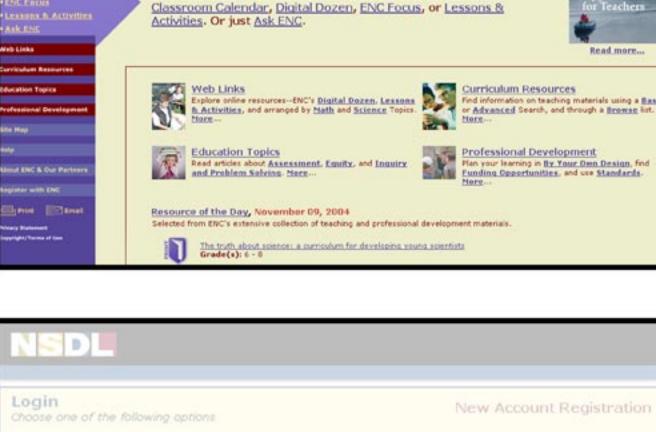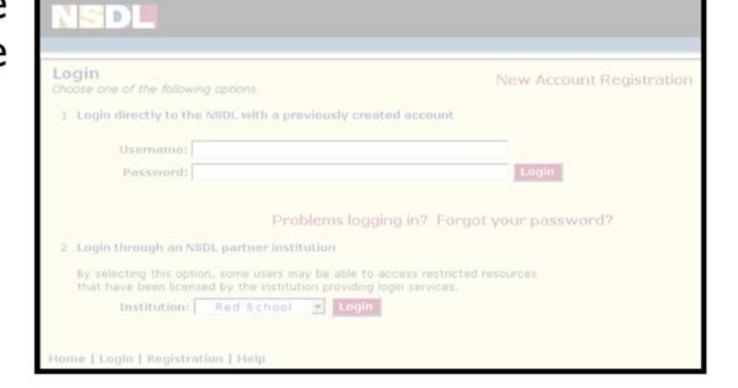

Together, **all students** from both schools learn about Bonsai trees first.

The **sixth graders** enter the desert exhibit and the **eighth grade** visits the tropics. The botanical garden guides verify who is who before separating the groups, and the chaperones make sure the students stay with their group.
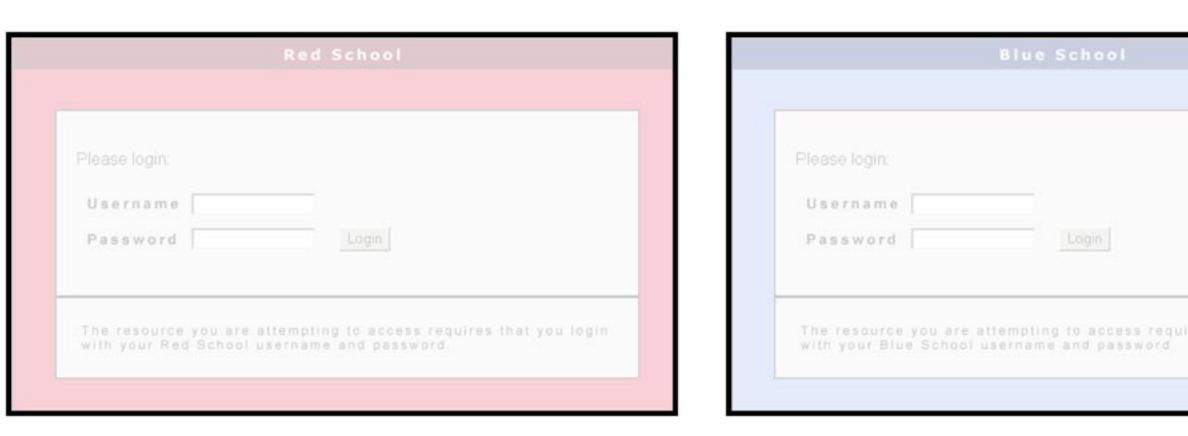

All students now go to the Eisenhower National Clearinghouse homepage. Since the students have already logged into a previous Shibboleth-enabled website, they can proceed directly to their assigned content on ENC.

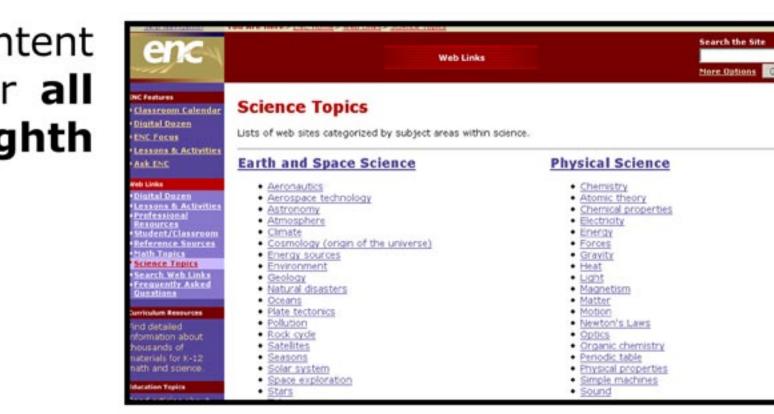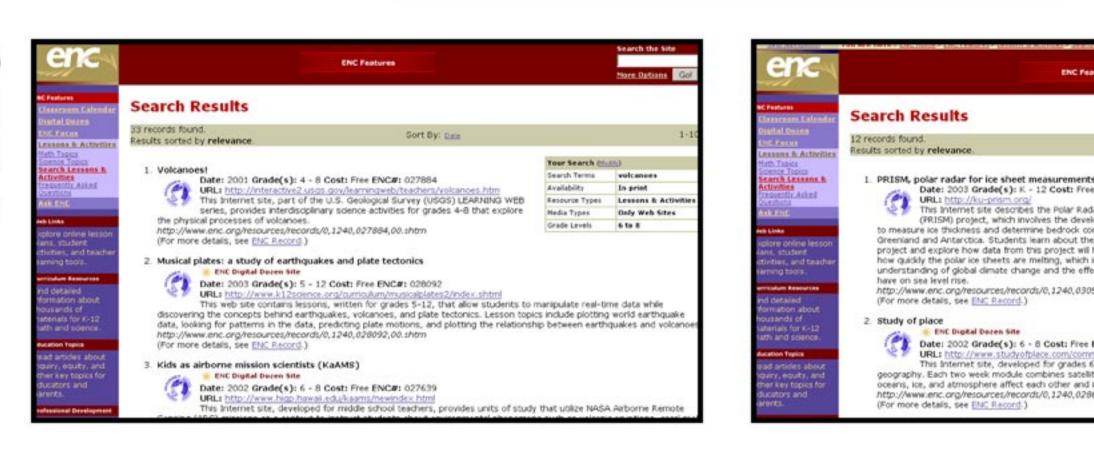If a student is not logged in, the WAYF appears when he or she tries to access the next page.

Students not logged in do so here for single sign-on access to other Shibboleth enabled websites visited.

The first page of protected content is in an area appropriate for **all users in the sixth and eighth grades**.

Sixth graders proceed to the volcano pages, and **eighth graders** proceed to the global warming section.