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Designing for the Student: Users' Styles and Department Web Sites

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Researchers have recognized that students rely on different learning styles and strategies to succeed, and the importance of recognizing different learning styles is well documented (e.g., Cassidy [2004](#); Vermunt 1994; Bransford et al. 1989; Kolb 1985). The same is true of how students use technological resources; it has become increasingly clear that there is no one-size-fits-all solution for all students. While a great deal has been written on these topics, the literature addressing such differences has focused primarily on course content (Fahy and Ally 2005; Lee et al. 2005; Ross and Lukow [2004](#); Baldwin and Sabry 2003; Brown, Bull, and Pendlebury 1997). There remains a dearth of research about the ancillary aspects of the education experience and about the uses of technologies not directly related to content but which students nonetheless incorporate into their overall learning and communication strategies. In this vein, academic department Web pages are important resources for students in higher education. These sites provide students with contact information for faculty members, sometimes including direct links to faculty members' home and course pages; information about class offerings and frequency; and data about the major, internships, external experiences, job placement, and the like. For some students, the department Web site becomes a support for academic advising and could be considered, in the broadest sense, a source for answers to frequently asked questions.

Although academic department Web pages play an important role in communicating with students, little research has been done to determine what kinds of information current students value on department Web pages. In this study, we examine how students value information commonly placed on department Web pages and suggest that just as in learning, different users have different information needs.

Background

The organization and navigation of Web sites should be a primary concern for administrators and Web designers. A recent emphasis on usability and user-centered design in Web site development (Brink, Gergle, and Wood 2002; Raskin 2000) has led to increased interest in understanding end users and how they perceive and use Web sites (Sandvig and Bajwa 2004; Tuzun et al. [2001](#)). In particular, Morris (2003) suggests that more time spent viewing a Web site improves users' perceptions of the organization's image.

Academic departments recognize the importance of a Web presence in recruiting new students and informing current students and alumni. A number of studies have examined college students' perceptions of Web site features. For example, Sandvig and Bajwa (2004) asked students to identify three information items they regularly seek. Online course registration was the most commonly cited item. Other frequently accessed items included, from most to least frequently specified, information about or access to the library catalog, library research tools, and book reservation services; academic program descriptions; transcripts and grades; instructor contact and background information; student employment opportunities; course descriptions; sports and athletics programs; admissions; student directory; financial aid and scholarships; student accounts; and online course management systems, such as WebCT or Blackboard.

Only a few studies have specifically assessed how students value information included on department Web sites. Ritter, Freed, and Haskett ([2005](#)) conjecture that "there are likely . . . numerous common users and tasks that all university department sites should support" (19). Pooch and Lefond (2003) and Pooch (2005) examined perceptions of prospective graduate students regarding which Web site elements enhance or

inhibit navigation and information retrieval. These studies found that prospective students tend to seek information on application criteria, deadlines and procedures, financial aid, and program descriptions.

Methodology

We arbitrarily selected one class from each of three departments (geography, recreation and sports management, and communications) and asked students in these undergraduate courses to rank a list of 40 common departmental Web site attributes generated from Ritter, Freed, and Haskett's (2005) work identifying common components of department Web pages (Table 1). Students were not given any incentive (e.g., extra credit) for participating, and this was a sample of convenience. While results generated from this study are specific to these undergraduate students, we are confident that this information and the q-method approach provide sufficient data from which we can draw preliminary conclusions about how students value information commonly placed on department Web pages.

Participants were instructed to sort 40 statement cards, each describing a single Web site element, into one of three piles: important, not important, and neutral. They were then instructed to refine the rankings in each pile further by assessing the importance of each element on a 7-point scale ranging from -3 for least important to +3 for most important (Exhibit 1). Responses were analyzed using Q-methodology, which allowed us to assess student valuation of specific Web site elements (Exhibit 2).

Q-methodology is a factor analysis procedure; in this case, each factor represents a conceptual template derived from each participant's placement of statements in comparison to the other statements. In other words, all participants who load significantly on a factor hold similar conceptions regarding the importance of particular Web page components. Group rankings were interpreted from the 7-point Likert scale; for example, a +3 ranking for a particular element indicates that that element is of the highest importance for the group concerned, and a -3 represents least importance. Taken together, these loadings construct a model of a group's conception regarding particular Web page components.

Results and Discussion

The analysis indicated that undergraduate users of department Web sites fall into categories of users, which we labeled degree driven, career oriented, department centered, and operationally centered (Table 2). We do not suggest exclusivity within categories but rather suggest that students in a given category exhibit a bias toward a specific type of Web-based data.

Degree Driven

Degree-driven students are primarily concerned with completing their degrees. Their information preferences (Table 3) include major requirements, course descriptions, course offerings by semester, and advisement information. This group thinks advisement information is much more important than any other group does. The preference for specific curriculum and course information suggests these students are focused on those items directly impacting their ability to earn a degree.

Career Oriented

The students in the second category, career oriented, report that information regarding placement after graduation is very important on a Web site. Valuable items for these students (Table 4) include information about internship and co-op education opportunities and career services, job openings for students and alumni, admission requirements, purpose of the department, degree options, course offerings by semester,

course descriptions, degree offerings, and major requirements. These students seem focused on their ability to obtain employment after graduation and on the opportunities that the department may provide for external experiences, such as internships, while they are enrolled in the program.

Department Centered

Department-centered students value department information as the most important part of a Web site ([Table 5](#)). These students are distinguished by their focus on the college experience and perceive the department as an important manifestation of that experience. They value information that includes the purpose of the department: welcome from the department head; internship opportunities, co-op education opportunities and career service; directory of faculty and staff members, including their contact information; undergraduate and graduate programs; degree options; course offerings; and job openings for students and alumni.

Operationally Centered

This is the most ambiguous group because a clearly definable pattern of preferences is less evident among these participants ([Table 6](#)). However, data analysis suggests this is a separate category. It is the category we know the least about and may represent outliers in the data. Students in this category thought that information on the undergraduate and graduate programs, degree options, major requirements, minor requirements, and other degree programs were very important to have on the department Web page.

Commonalities

All four groups share at least a minimal agreement on the perceived importance of some items as reflected by high mean factor loadings for those items ([Table 7](#)). Information on course descriptions, major requirements, undergraduate and graduate programs, and degree options were universally considered important components on a department Web page, according to the scale valuing Web content components ([Table 1](#)). Other information, such as directory of faculty and staff members, was moderately important to all students. Course offerings by semester and scholarship information were considered important by three of the four groups. All four groups were fairly ambivalent about the need for links to the university home page, the department's campus address, student organizations and clubs, university points of contact, conference information, and admissions points of contact.

Implications

Our data lead us to a number of conclusions that department Web representatives and Web designers should consider. First, users within a particular category look for similar types of information on a department Web site. In particular, this study suggests that undergraduate student users of department Web sites fall into one of four categories: degree driven, department centered, career oriented, and operationally centered. These groups differ in their information expectations for department Web sites. The data indicate that a single, common approach will not meet the expectations of all groups. Understanding group differences will assist designers in clustering related links and developing multiple navigation paths to meet the expectations of student users.

Most university and department Web sites place students into two categories: current students and prospective students. The four categories identified in this research expand Web designers' knowledge of current student preferences. Such knowledge enhances the potential for improved design. Borrowing from market-segmentation principles, Web designers can enhance the student experience by targeting specific expectations and needs of subsets of the total population of students. The suggested homogeneity of subsets

allows Web designers to target individual subsets with specific content.

Operationalize the Results

According to our respondents' ranking of content, students commonly value certain information highly and other information moderately while some information is uniquely valued by a particular group ([Exhibit 3](#)). We suggest a value in clustering the information presented on department Web sites. In many cases, such clustering does not now occur.

A minimum level of information that is readily available to all students, regardless of their inclusion category, is important. A second level of clustering can increase the level of organization and structure within a department Web site. Departments should consider creating a hierarchical or clustered order of information with the first three levels based on the data presented in this article. The results suggest a hierarchy of: 1) curriculum information; 2) internships, co-ops, and career information; and 3) information about the department ([Figure 1](#)). This structure does not preclude the inclusion of additional student-related information. However, we do suggest that such information should be placed in additional categories rather than in the three suggested categories or as stand-alone items among them. Furthermore, students should not be limited to a single path to finding information. Departments may wish to pursue a multipath approach for navigation that recognizes that different users may seek the same information via different avenues. For example, in addition to linking from a page for current students, links to highly valued information may be prominently placed on the main page of the Web site.

As Daniel D. McLean, chair of the department of recreation and sport management at the University of Nevada, Las Vegas, attests, departments are increasingly challenged to provide information to students with diverse user styles as well as diverse technical abilities ([Exhibit 4](#)). This research provides an understanding that just as students are not all alike in the classroom, they also perceive what is important in the content of a Web site differently. Departments who understand this point gain an advantage over those departments who plod forward assuming their knowledge is good enough.

Conclusion

Despite the importance of department Web sites in informing students, very little research has been done to investigate how students use their department's Web sites. This study examined how undergraduate students value specific components of department Web pages. Using Q-methodology to identify commonalities in preferences for components commonly found in department websites, we identified four categories of users, which we labeled degree driven, career oriented, department centered, and operationally centered. Each group appears motivated by different learning goals that influence their prioritizing of information. In addition, all groups share a common level of interest in some components. We believe this information may be useful to department decision-makers in redesigning and improving the utility of their Web sites. Such an approach should increase understanding of Web page users and allow departments to tailor their Web pages to specific student needs and expectations.

Possibly even more compelling is the emergence of the groups themselves. Kolb's learning styles (1985) provided an impetus for faculty to understand how students learn. We propose that this study provides the foundation for a similar project related to student use of Web resources as well as a broader improvement in overall learning by understanding how to better tailor curricula to meet students' goals and styles.

We hope that this study serves as an impetus for additional research into academic department Web pages by suggesting several new research questions. For example, do new students start out department centered and then become degree driven or career oriented? Do students migrate their perceptions in some other way, or does migration not occur? In addition, our research did not study the impact that Web design has on the

ranking of information on Web pages. It may be that the typical or expected organization of information on departmental Web sites affects students' perception of the importance of the information presented to them. Finally, this study provides an insight into how students interact with their department or major that may have implications for other areas outside department Web site design. This insight may lead to an investigation into whether these information goals are related to psychometric types and if this has implications for other areas, such as advisement or curriculum design.

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