Information Visualization: Colgate University Relational Browser and Virtual Tour

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Company: Enlighten Co.
I. The Problem

The project problem is defined by three groups: the student, the parent, and Colgate University. The problem consists of the University generating a wealth of information concerning admissions, academics, financial aid, and social aspects (e.g. athletics, fraternities, sororities, etc) that must be easily accessed and understood by students and parents engaged in, what amounts to, comparison shopping for a higher education. The University wishes not only to appeal highly to its audience, but to gain a four-year financial commitment from a potential student. The only way to obtain such a commitment is to make a “perfect” match in terms of student potential, academic challenge and variety, financial support, social integration, and the strong possibility of future employment or acceptance to post-graduate education from achieving an education, with all its varied experiences, from Colgate University. This student-to-University matching is achievable through making information more accessible and understandable for both students and parents.

Other obstacles presented by students lie in the small number of applications students will generate in their search for higher education. According to Peterson Guide surveys, four to seven is a common range for numbers of colleges applied to, especially considering that application fees range from $25 to $100 and that more competitive schools require at least one original essay. (Tips for picking the right school - Jun. 21, 2002 cnnmoney. Found World Wide Web, October 2002. http://money.cnn.com/2002/06/21/pt/college/q_choosecollege/). Over 90 percent of high school students conduct at least part of their search via the Internet, up from 4 percent in 1996. This is due to the vast amount of college-related resources, from free essay advice to test prep courses, available on the Web (usnews.com: America’s Best Colleges 2003: Digging for pay dirt on... Found World Wide Web, October 2002. http://www.usnews.com/usnews/edu/college/articles/brief/03surf_brie...). Students are then faced with searching for information pertinent to their interests, interests that are often weighted by subjective feelings (e.g. how much fun do students have/) as much as by objective numbers (e.g. tuition costs). Disparate information must be found, weighted, and pooled in order to answer the question: “do I want to go to this university?”
II. The Project Goals

- Increased branding of the University will result in a “better” selection of students (e.g. number of applications, higher scoring, etc).
- A more interactive site will increase interest of potential students.
- A more “personal” approach will create a positive interest in Colgate as a potential pick for higher education among the best students.

III. Focus and Context

It was determined that the primary focus of this project was prospective students. The additional information gathered for the Parent group pointed to cross-over points (e.g. financial aid, academics, housing) that would appear in the visualizations involved in searching the site (e.g. hyperbolic browsers, visual navigations such as KartOO). Some information, such as financial aid, would be searched by both groups as part of a gathering function (e.g. “berry-picking”), though additional features that would have provided comparison of data points (e.g. interactive bar graphs) would not be within the target scope.

An “averaged” student (Genevieve Thompson, “Jenny”; see Appendix B) was created to pool all information from the survey, observations, and personae. Her tasks were used to determine broad questions couched in natural language. Decomposing these questions resulted in goal “chunks”, i.e. categories from which varying types of information would need to be found by the user in order to satisfy a need. For example, under the category of Social Scene, Jenny wished to find out what was available for students to do other than academics. This query will require information on broad social activities in and around the school (e.g. theater, sports, special events), as well as specific information covering opportunities for her drumming skills.

For a project overview, please see the Project Overview Chart on page 4.

Student User Goals

Based on the survey results, personae and scenarios (see Appendices B, F, G), the following student user goals were generated.
# Chart: Project Overview

<table>
<thead>
<tr>
<th>Questions</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the service?</td>
<td>Web delivery of content utilizing techniques of information visualization</td>
</tr>
<tr>
<td>What services is it intended for the system to provide?</td>
<td>Search and retrieval of information per user need. This information need may require the gathering of data that has no logical connection outside of the user’s personal preference, e.g., sports and financial aid.</td>
</tr>
<tr>
<td>What are the aims of the project?</td>
<td>Integration of navigational and search functions in easily accessible visualizations to enhance use and satisfaction requirements of prospective University students. Increase “branding” of Colgate University through addition of personal elements, e.g., student movies, interviews, visuals of classroom and instructors, within the Virtual Tour feature. Integration of the Virtual Tour feature with main information categories such as Admissions, Financial Aid, etc.</td>
</tr>
<tr>
<td>Who is the service intended for (Target market)?</td>
<td>Prospective University students</td>
</tr>
<tr>
<td>Who will use the service?</td>
<td>The general public, with emphasis on attracting ages 17-21 of both genders.</td>
</tr>
<tr>
<td>Why is the service needed?</td>
<td>To be competitive among other “Ivy League” schools in the targeting and acceptance of highly qualified prospective students by providing a wide-range of information in a manner that promotes a positive decision. To increase Colgate University’s national ranking by exposure of the University’s high standards and solid academic/social qualities on the web to a wide audience.</td>
</tr>
<tr>
<td>Where will the service be used?</td>
<td>Any computer having Internet access and a web browser.</td>
</tr>
<tr>
<td>How will the service be used?</td>
<td>General web browser navigation.</td>
</tr>
<tr>
<td>How will the user obtain the service?</td>
<td>Via Colgate University website.</td>
</tr>
<tr>
<td>How will the user learn to use the service?</td>
<td>General web browser navigation. Information visualizations should be intuitive enough not to require much learning. Text pop-ups will provide cues as to feature identity or “next step” requirements.</td>
</tr>
<tr>
<td>How will the service be installed?</td>
<td>A component of the website. Multimedia elements requiring plug-ins will be accompanied by scripting elements to indicate to the user what plug-ins are not contained in their browser and where the user may obtain the necessary helper applications.</td>
</tr>
<tr>
<td>How will the service be maintained?</td>
<td>The information visualizations will be contained in the general website and will be maintained by University web and programming staff.</td>
</tr>
</tbody>
</table>
It should be noted that IRB approval was gained well into the semester due to the problems associated with projects that have the potential to inadvertently draw under-age users to web-based surveys. Due to the lateness of the approval, user testing was not expanded beyond the initial survey and observations of Appendix E. Further user testing was deemed too costly in terms of time and emphasis was placed on pen-and-paper heuristic evaluation methods.

### IV. Information and Information Visualizations

Results of the task decomposition were analyzed for type of data (see Appendices H & I), required use of the data and best fit of information visualization. A total of 18 of the 32 tasks were targeted as candidates for information visualizations.

- Clustering using natural language and conceptual search criteria appeared in 14 out of 18 tasks, unifying disparate data searches into one visualization.
- Five of the 18 tasks showed users requiring the ability to focus in on finer granularity of data while maintaining the global view (zooming/multiscale environment). Associated with the zooming capacity, was the need for associated data to be exposed with the local view (e.g. showing a building with a list of activities, departments, etc., associated with that building). Affinity diagrams in the form of node-link diagrams could be used. Limited clustering visualizations could also be substituted here.

<table>
<thead>
<tr>
<th>Category</th>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Scene: student organizations, social scene, sports</td>
<td>To discover information concerning student activities, theater, and other extra-curricula.</td>
</tr>
<tr>
<td></td>
<td>To gather details on social life and student organizations</td>
</tr>
<tr>
<td>Academics</td>
<td>To learn about academic and career advising (e.g. pre-med)</td>
</tr>
<tr>
<td></td>
<td>To learn about the various departments, academic requirements, and research possibilities</td>
</tr>
<tr>
<td>Finances</td>
<td>To learn of job opportunities to aid in financial support</td>
</tr>
<tr>
<td></td>
<td>To gather basic information about the school, including cost, admission standards, and student body demographics.</td>
</tr>
<tr>
<td>University Characteristics</td>
<td>To determine Colgate’s ranking across the nation and among similar schools.</td>
</tr>
<tr>
<td></td>
<td>To look at location, general atmosphere, and “who” the University of Colgate is.</td>
</tr>
</tbody>
</table>
• Four of the 18 tasks pointed to the need for a time line along which to plot co-occurrence of sub-tasks, e.g. application submissions.
• Four of the 18 also suggested the need of profiles in the form of bar charts, histograms, or parallel coordinates in order to compare and interact with compiled data such as financial aid, grants, tuition costs.
• A need for weighting of subjective terms and data appeared in 2 out of the 18, and was, therefore, deemed not important to the overall user goals.

Prototype -- Information Visualization

The majority of user tasks pointed to the need to cluster information based on searching behaviors encompassing semantics, context, and emotional values. Combined with the behaviors of a young adult population, the choice of visualizations that might be applied are considerably narrowed. Emotional value can be swayed by appearance of an interface, perception of difficulty in navigation, frustration at obtaining the wrong information or taking “too long” to get to the required information.

Bearing in mind that a virtual tour concept was part of the design, the idea of local and global navigation and contextual searches were targeted as the actions our student user most required, their goals often couched in a wide range of semantics and subjective terminology (e.g. like, fun, good) which would range far across an extensive number of webpages. Rather than keeping track of what page they were on, the idea of giving them a “place”, i.e. building on the campus map, would give them an idea of where they were and where they had been. This is an idea not dissimilar from knowing which neighbor someone is talking about by knowing where that neighbor lives on the block (“you know, third house from the corner with white trim”). This would require not one visual field but three: a map for orientation, a clustering device to bring all the data of a query together with tags to show relationships, and a display field to show the user the data chosen.
The Campus Map -- Zooming In for a Bird’s Eye View

The problem with zooming into any particular 2-dimensional plane is the loss of context as the target is enlarged, pushing the outer details beyond the image frame. To maintain the user’s sense of overall place, the target area was devised more as a fisheye lens, a type of magnifying glass, enlarging only that which was centered beneath the lens yet leaving the outer context. The “more focused” (the more clicks) the lens, the more detail (information) is revealed from a drawing of a number of campus buildings to a specific building with embedded links to more information such as a panorama (which would open in the main display window). As the user interacted with the other frames (the clustering device, the main display frame), the position of the campus map would update in response to new places correlating to the data being requested.

Clustering -- Relational Searching

Decisions on what university to go to are often emotional ones, not unsurprising considering the age group this affects. It was determined that a search engine capable of producing semantically linked results would provide our users with the highest recall. Precision would be balanced by the results being displayed as weighted objects using color, size, or distance from the query source. A best match appeared to be a KartOO-like search engine. Results would be displayed in a graphical, networked format. Nodes would be linked by common terms, the links between the nodes color coded to see how terms relate to different sites. As the user chooses specific nodes, any required updates should occur within both the campus map and the main display frame. The campus map will display the most semantically relevant building zoomed in with a fisheye view. In addition, the selected node will be highlighted with a pop-out color, such as bright yellow, that matches the
building’s “halo.” Other buildings with strong affinities to the search term also will display a halo. The user can then navigate the content from four points: with the KartOO interface, with the campus map, with the content window or from a link within their NotePad.

This approach tries to approximate the Qualitative Mental Model of a high school student with a minimum level of gaming experience (almost all U.S. students today). These users are used to navigating through a role-playing video game with their main view continually matched with a “you are here” map (the campus map) and a list of tools (the KartOO links).

The new Colgate view also supports findings by Nardi and Barreau (SIGCHI 1995) that found a preference amongst users for “location-based search” and supported “the critical reminding function of placement.” With the campus map, users can use browse in an unrestricted sense to review the University. With the consistent placement of buildings, they have a memory cue on repeat visits on where to begin. But repeat visits do not substitute for the first entry to this portion of Colgate’s site.

When a visitor arrives at the site for the first time, they are greeted with a populated screen. In the absence of other contextual information, the user will have a “branded” search term, closely linked with a targeted Colgate marketing strength—possibly “Undergraduate Research”—in the search box. The KarOO window also will

have this term as its focal point as will the campus map building.

Each search thereafter will direct the results displayed by KartOO, and highlight in a more neutral color than bright yellow, the places visited on the campus map. Users can retrieve a search by clicking on one of the buildings directly.

These search sessions will be tracked with cookies, so upon a repeat visit, the user receives a more tailored viewpoint. Also, each re-entry to the page will begin where the user left off, i.e. if they last searched for Ultimate Frisbee, this is the screen that will come up on the next visit. Even if they select “clear results” they will still receive a newly populated page upon each return visit with a branded message from Colgate.

Main Display Frame -- Displaying the Content

The current Virtual Tour displays personalized elements of Colgate University: emphasized demographics, personal vignettes, small static images, and links to other pages. Those elements are only a simple version of the possible choices both the university could make in presentation and the user would wish to choose in order to decide whether the school “fits”. The content of this website is not within scope of this project, however, it is hoped that new media and information will be presented, that better metadata will be employed, and that the power of the relational search will be exploited in order to serve the user, and ultimately the school, better.

The Additional Resource -- My NotePad

Part of the difficulty in making a decision is having all the information contained in one location where that information can be browsed over and over again, allowing the user to weight the elements as they redefine what is and is not important to them. The concept of a NotePad was developed as a place where the user could drag and drop search results of interest, slowly compiling an overview of their various searches. The NotePad would also allow the user to annotate the information they collected in order to capture thoughts and feelings, or make note of new questions generated by the accumulating information. This feature would be a part of the interface and require an initial log-in so the university servers would be able to provide tracking and storing of a set amount of information.
Meeting the User’s Needs

In the use of a multiple frame interface, the following is achieved:

• Maintaining and enforcing context through zooming and fisheye views of local and global navigation,
• Maximizing and expanding the types of information through the use of relational (semantic) searching,
• Employing the main space for the display of content, thus moving the user’s eye to the point of the search.

The use of the relational search engine patterned after KartOO brings an element of fun and interest, esoteric elements but of importance to our particular demographic to whom “appearance is everything”. The balance of two over one maximizes the screen real estate while maintaining a relatively uncluttered appearance. Entry points are obvious, the search text field being of primary use in most browsers and within most websites. In using semantics as part of the metadata search (though results are always dependent on how good the metadata is), searching is made more flexible and expanded to cover a wider range of intent. It is part of this process to enable the user to gain knowledge of how the search process is achieved by providing descriptions of linkage within the query as well as information on the query. The familiarity of zooming maps and frames, combined with a clean search interface, should ease the user into the additional information and new visuals provided by the search engine. The interdependent updating of frames should provide consistent context and focus for the user, i.e. the user should always know where they are and how they got there, what information they found and what new information is being chased.

What remains to be accomplished is

• More user testing,
• Creation of more interactive content.
• Updated information architecture.

Out of these, only user testing is within the scope of this type of project. All other requirements are the concern of both Enlighten and Colgate University.

Recommendations from the Presentation

Recommendations from the presentation have been incorporated into the Clustering - Relational Searching
discussion on page 7. Recommendations on additional user testing could not be carried out due to time constraints.

V. Division of Labor and Schedules

See Appendix A for the chart listing tasks and deadlines.
## Appendix A: Task list, deadlines, and team members

<table>
<thead>
<tr>
<th>Date</th>
<th>Task</th>
<th>Team Member</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.03.02</td>
<td>personae due</td>
<td>all members</td>
</tr>
<tr>
<td>10.10.02</td>
<td>task analysis brainstorm session</td>
<td>all members</td>
</tr>
<tr>
<td>10.10.02</td>
<td>site map due</td>
<td>Rebecca Yoo</td>
</tr>
<tr>
<td>10.10.02</td>
<td>literature search due</td>
<td>Christie Patrick, Drew Montag</td>
</tr>
<tr>
<td>10.14.02</td>
<td>site map restructure due</td>
<td>Geri Durka-Pelok</td>
</tr>
<tr>
<td>10.17.02</td>
<td>task analysis due</td>
<td>all members</td>
</tr>
<tr>
<td>10.21.02</td>
<td>final survey question design</td>
<td>all members</td>
</tr>
<tr>
<td>10.21.02</td>
<td>Virtual tour hierarchy - draft</td>
<td>Geri Durka-Pelok</td>
</tr>
<tr>
<td>10.24.02</td>
<td>survey uploaded</td>
<td>Rebecca Yoo</td>
</tr>
<tr>
<td>10.24.02</td>
<td>highschool student observation finished</td>
<td>Theresa Maddix</td>
</tr>
<tr>
<td>10.28.02</td>
<td>end web survey</td>
<td>Rebecca Yoo</td>
</tr>
<tr>
<td>10.28.02</td>
<td>Freshman university student survey begun</td>
<td>Rebecca Yoo</td>
</tr>
<tr>
<td>10.31.02</td>
<td>Freshman university student survey ended</td>
<td>Rebecca Yoo</td>
</tr>
<tr>
<td>10.31.02</td>
<td>rough layouts of visualizations due</td>
<td>all team members</td>
</tr>
<tr>
<td>11.07.02</td>
<td>progress report due</td>
<td>all team members</td>
</tr>
<tr>
<td>11.11.02</td>
<td>final layouts</td>
<td>all team members</td>
</tr>
<tr>
<td>11.18.02</td>
<td>First draft of Final Report</td>
<td>all team members</td>
</tr>
<tr>
<td>11.25.02</td>
<td>tentative: final report due</td>
<td>all team members</td>
</tr>
<tr>
<td>12.02.02</td>
<td>final powerpoints due</td>
<td>all team members</td>
</tr>
</tbody>
</table>

Note: team member duties are subject to change.
Appendix B: Personae and Scenarios

Genevieve Thompson, “averaged” student

Genevieve Thompson wouldn’t like you to know that just a few years ago she was known as Sporty Spice to all of her friends. She was an ace defender on the soccer team and had spent the last four summers playing AAU volleyball. Jenny also spent Saturday nights playing drums in her boyfriend’s band. Then right before her sophomore year, she tore a ligament in her right knee and her life took a considerable turn. She changed her nickname to Jenny.

Always an honors student, she turned to her studies with zeal and began to entertain the thought of what it would be like find a way to eliminate the curse of breast cancer. Four family members had died from the disease. When she wasn’t immersed in her need to cure cancer, Jenny spent considerable time watching old movies. She especially liked Audrey Hepburn in Sabrina and knew that as soon as she could, she would like to live in Paris.

But, Paris would have to wait. Now it was her junior year and she had her game face on about getting into the right school. She had decided she didn’t want to follow in her father’s footsteps and go to Dartmouth. She also couldn’t picture herself in the shoes of one of her mother’s sorority sisters and so ruled out Cornell. This left the field wide open. Only some things did she feel she knew down deep in her core: Her choice had to have a solid science program—she wanted to be able to find a good job coming out. It had to be a strong liberal arts school with small class sizes---She had spent her middle school years lost in a crowd at Brownstone, the local public school, before going to the smaller classes and more personalized style of Ivy Lake, a private high school. It also had to have an engaging social scene—Jenny couldn’t bear to spend four years with book worms. And perhaps, most importantly to her at that moment, it had to offer Ultimate Frisbee. During the past summer her knee had recovered to the point where she could reengage in “friendly” sports and she’d found the Ultimate team right up her alley.

Jenny also knew that she’d have to sell the school to her parents who were footing the bill.

Unimpressed by the mail that kept cluttering her mailbox and her life, Jenny grabbed a NotePad and
turned to Google. Here she typed in “Fiske” (her high school counselor was always saying how great the Fiske Guide to Colleges is), US News (she knew they did rankings) and Cornell (why not start by looking at what they had to say about her mom’s school.) From the first link, she saw links to Fiske’s views on more than 300 colleges. She started to go through the list.

Here are some of the **tasks** she has in mind when she arrives at the Colgate Web site:

1. Jenny wants to know how the school’s biology programs rate and when she might be able to do research. She also wants to know if it is real research or just faked labs like she has done in high school. Will she be able to learn from professors or will she be stuck with graduate students? Will she be in huge lecture halls taking notes or working in individual labs with professors?

2. She wants to know what the “flavor” of the campus is. Is this a fun place? Is it ultra-preppy? Do the students do anything besides study? Would she have to join a sorority? Will she be able to play the drums?

3. Jenny wants to know if she will be able to play Ultimate Frisbee.

4. Jenny needs to find out how much it will cost so she can give comparative figures to her parents with those of Cornell and Dartmouth.

5. Jenny wants to know what her chances are of getting in and if she can apply online. Her parents are making her pay the application costs for any colleges she applies to other than Cornell and Dartmouth. She also hates to hassle with finding stamps and printing out applications. She already has other college applications together and wants to cut, copy and paste where possible.

6. Jenny wants to know how to visit. She feels she can’t get a feel for atmosphere without actually going there. She wonders what the physical campus is like. Is it industrial? Cow pasture?

7. Jenny needs to find rankings information to take to her parents. She needs to build a strong case for why this is the right school and thinks that US News and other reporting places will weigh more heavily in her arguments
than her own feelings.

8. Jenny wants to know if there is an opportunity for her to travel abroad while in college.

**Persona I: Parent**

- **Name:** Sydney Williams Tobler
- **Gender:** female
- **Age:** 42
- **Occupation:** Investment banker
- **Education:** B.A. Amherst College, MA; MBA, NYU
- **Computer:** Macintosh G4 (home), UNIX (work) terminal
- **Computer experience:** email (Eudora), general word-processing (MS Office 2000), proprietary banking software (UNIX based), Photoshop Elements, iPhoto
- **Children:** 1 female, Hannah, age 17, interested in liberal arts colleges/universities. (her best friend is going to Colgate University).
- **Country/Language:** USA/English

**Scenario I.1**

Sydney is a hard-working, single mom, interested in promoting her daughter’s independent streak, yet worried about safety and other issues facing highschool students. Her daughter, Hannah, is interested in Colgate University because her best friend is going there. Sydney is looking for information on finances, housing, safety issues, in addition to academics. Hannah is interested in the life sciences, maybe environmental sciences. Sydney wants to make certain her daughter enjoys her college years, as well as teaching her fiscal responsibility. Work study has been discussed and Hannah is aware that, even though her mother could easily pay for all her expenses, pin money and any extras outside of room, board, and tuition, will have to be earned. Sydney wants to make certain that work study could be provided to also help Hannah decide on what she wants to be when she graduates.

Sydney is used to surfing the web for financial information. She creates a list of items to search on and goes
Scenario I.2
Sydney is a single mom just starting out in the financial sector in her own business. She doesn’t have the finances to fully cover her daughter’s tuition out-of-state, but she doesn’t want to keep Hannah from applying to good schools. Sydney knows Hannah is interested in journalism but wants to make certain that her daughter has a chance to examine other interests. Even more, she wants to be certain her dollars are well-spent. She wants to comparison shop the liberal arts colleges for tuition and financial support. Hannah is leaning toward the “Ivy League” schools and Sydney is worried about the expense and the experience.

Sydney has just gotten her computer and is enjoying the experience of surfing. She is having problems keeping track of all the information she is accumulating, but has gotten the hang of bookmarking as she goes. Still its an awful lot of information to compare.

Persona II: Transfer

- Name: Andrew Harris
- Gender: male
- Age: 20
- Occupation: student
- Education: History major
- Computer: iMac G4
- Computer experience: likes to surf, play games, and check out really cool websites like Valley of the Shadows.
- Children: 0
- Country/Language: USA/English

Scenario II.1
Andrew is unhappy at Worcester College, Ohio. He would love to go away but knows that he can’t afford just bouncing from school to school. He needs to get a good education and would not want to give up his
love for history. He would also like a school that seems to be innovative without losing a comfortable, close 
atmosphere. He likes to socialize like any other college student, but also likes to focus on his subjects. He’s 
started surfing for other schools and is interested in schools whose websites show more than the regular 
format. He would like to move out of the dorms but needs a good job to add the extra to his loans in order 
to pay for the off-campus housing. He would like to compare finances and academics against Worcester as 
a baseline.

Scenario II.2

Andrew is bummed. His parents have said that he needs to go to an in-state college which means he’ll 
have to leave the University of Vermont in Burlington and choose a school in New York State. He’s a 
microbiology major and needs a comparable department at the next school, as well as getting a job to 
replace the current research assistant position he now has. Its not that he really will need the money but he 
is counting on the work experience to help him in looking for jobs after he graduates. He’s also interested 
in going to a school in a social and physical environment similar to Burlington. He’s begun surfing the net 
to compare schools based on New York state, microbiology, and jobs.

Persona III: Highschool Student

• Name: Creighton Buchanan

• Age: 18

• Occupation: Student, movie theater usher

• Interests: Soccer, environmental activism, & reading

Scenario III.1

Creighton Buchanan is an 18-year-old high school senior at a midsized, suburban, public school. His 
mother attended an “Ivy League” University for her undergraduate degree in Biochemistry and his father 
attended a small, private liberal arts college and majored in history. Now his mother works, as a research 
scientist at a local hospital and his father is a partner in a law firm in the city. However, Creighton would 
like to attend a large public university to perhaps major in anthropology or archaeology. At school, 
Creighton plays on the varsity soccer team and he is very involved with the school’s environmental club.
After school and on weekends he works as an usher at a movie theater. In addition, Creighton is an only child.

**Persona IV: Highschool Student**

- Name: Olivia Jefferson
- Age: 18
- Occupation: Student, waitress
- Interests: Writing, politics, theater

Olivia Jefferson is an 18-year-old high school senior at a small, private school. Her mother attended a large, public university for her undergraduate degree in education and her father attended a small, community college for his associate degree in plumbing. Now her mother works as a professor of English Literature at her alma mater and her father owns his own plumbing company with his brother. Olivia is uncertain what type of school she would like to go to and she does not really have any set career aspirations. At school, Olivia is on the debate team, school newspaper, and she regularly appears in the school’s theatrical productions. On weekends, she works as a waitress at a restaurant at the mall. Olivia has two younger brothers.

**Scenario IV.1**

Since Olivia does not have any firm career goals; she is mainly looking into schools that have a solid liberal arts program where she would be free to take all types of classes. Olivia would also like to stay involved with student publications and productions, as well as a debate or forensics team, if possible. Her parents are supportive of wherever she chooses, however they are interested in the types of financial aid and work-study programs that are available. In addition, Olivia’s parents would like her to attend a college where the student population and the staff are diverse. Her college search has included talking to school counselors and looking at the literature being mailed to her house. However, Olivia is somewhat apprehensive about looking for information on the Internet.

**Persona V: Highschool Student**

Name: Sarah
Age: 16

- Is a junior at a prestigious private school in Washington, DC
- Only child, Mother has a JD, Father has a PhD in Physics
- Is interested in Environmental Law
- Wants to go to a small liberal arts school in the East that will let her be flexible in the classes that she has to take
- Wants to be close to a city
- Played high school softball and volleyball
- Volunteers at local homeless shelter on weekends
- Does not want a school with a big Greek system

Scenario V.1

- Sarah goes on the web to see what kind of pre-law programs there are at Colgate
- She tries to see how much flexibility she has in picking classes and what kind of classes there are
- She looks to see how far Colgate is from the nearest city in case she and her future friends want to go out
- Looks to find out what kind of informal sports (non-varsity) are available
- Looks for community service information
- Tries to find details on social life and student organizations

**Persona VI: Highschool Student**

Name: Erin

Age: 18

- Is the senior class president of her public high school in a NJ suburb of NY City
- She is planning to go to med school after college
- She does not want to go to a large school like her older brother
- She does not want to go too far from home
- She has played varsity soccer for 2 years
- She wants to continue to participate in sports in college, but is very focused on getting good grades, experience, and MCAT scores in order to get into med school.
Scenario VI.1

• Erin goes to the website to check what kind of reputation Colgate has (rankings)
• She wants to know if going to Colgate will help her get into med school
• She wants to know if they have a planned pre-med program and what type of advising is available
• She also wants to know basic information about the school, including cost, admissions standards, and student body demographics
Appendix C: Site Map (http://www.colgate.edu)

About Colgate
- Welcome to Colgate
- What People are Saying About Colgate
- The Colgate Scene
- College Press Releases

Admissions
- Applying to Colgate
- Visiting Colgate
- Virtual Tour
- International Students
- Transfer Admission
- Graduate Admission
- Colgate on the Road
- Frequently Asked Questions

Aid
- Office of Financial Aid
- Alumni Memorial Scholars

Contact Information
- Address
- University Directory
- How to Contact a Current Student
- Join the Mailing List

Location Information
- Campus Map
• Directions to Colgate

• The Hamilton, New York Community
  o Entertainment
  o Lodging
  o Personal Needs
  o Restaurants
  o Travel Arrangements
  o Partnership for Community Development

Colgate Calendars
• Academic Calendar
• Commencement Weekend
• Orientation Schedule
• Athletics
• Bookstore
• Brown Bag Seminar
• Computer Short Course
• Concert
• Conference
• Entertainment
• Family Weekend
• Film
• Health Center
• Information Session
• Lecture/Colloquium
• Living Writers
• Meeting/Discussion
• Reception
• Religious
• Special Event
• Workshop

Handbooks and Reports
• Colgate Catalogue
• Computing Policies
• Student Handbook
• Middle States Self-Study Report

Computing Services
• Information Technology Services
• Web Publishing Guide
• ITCS Newsletter

Academic Information
• Courses of Study
• Academic Calendar
• Class Websites
• Colgate Catalogue
• Course Booklet
• Departments & Programs
• Faculty Teaching & Research Directory
• Liberal Arts Core Curriculum
• Off-Campus Study
• Office of Undergraduate Studies
• Graduate Studies
• Summer Undergraduate Research Program
• Bookstore
Museums & Centers

- Alana Cultural Center
- Center for Ethics & World Societies
- Clifford Gallery
- Longyear Museum of Anthropology
- Picker Art Gallery
- W. M. Keck Humanities Resource Center

Athletics

- Teams (http://athletics.colgate.edu)
- Intramural Sports
- Athletics News

Campus Life

- Barge Canal Coffee Company
- The Maroon-News
- Campus Culture Task Force
- Colgate Activities Board (CAB)
- Colgate Campus Dining
- The COVE (volunteering & outreach)
- Fraternity & Sorority Affairs
- Office of Residential Life
- Office of Student Activities
- Outdoor Education Program
- Personal Web Pages
- Skin Deep (race discussions)
- Student Organizations
- Student Government
- Bookstore Newsletter
Directory Offices & Services

- Academic Photography
- Accounting & Control
- Administrative Advising
- Administrative Services
- Admission
- Alumni Affairs
- Annual Fund
- Associate Dean of Faculty
- Associate Dean of the College
- Athletic Communications
- Athletics - Bowling Lanes
- Athletics - Equipment Cage
- Athletics - Huntington
- Athletics - Men’s Equipment
- Athletics - Women’s Equipment
- Athletics-Physical Education
- Athletics-Tickets Office
- Budget & Decision Support
- Campus Life
- Campus Safety
- Career Services
- Chaplain’s Office
- Colgate Bookstore
- Colgate Camp
- Communications
- Corporate, Foundation & Government Relations
- Counseling & Psychological Services
• Counseling Center
• COVE
• Cultural Center
• Dean of Faculty
• Dean of Faculty/Provost
• Dean of the College
• Development
• Development - Capital Support
• Development - Parents’ Fund
• Development Systems & Research
• Electronics Shop
• Financial Aid
• First Year Students
• Fraternity & Sorority Affairs
• Health Sciences
• Health Services
• Human Resources
• Information Technology
• Mail Services
• Memorial Chapel
• Multicultural Affairs
• Natural Sciences
• Peace & Asian Studies
• Physical Plant
• Picker Art Gallery
• Planned Giving
• President’s Office
• Printing
• Printing & Mail Services
• Psychology Department
• Purchasing
• Registrar
• Residential Life
• Russ, EALL, German & Jewish St
• Seven Oaks Golf Course
• Sodexho Campus Services
• Special Events
• Student Activities
• Student Affairs
• TAG
• The Barge Canal Coffee Company
• Treasurer’s Office
• Undergraduate Studies
• University Relations
• Watson House
• Writing & Social Sciences

Giving to Colgate

• Completely different website ([http://www.colgatealumni.org/waystogive.htm](http://www.colgatealumni.org/waystogive.htm))
Appendix D: Site Design - Hierarchy

1. General Information
   A. Campus map (redundant information if combined with Tour)
      (1) Directions
      (2) Admissions
      (3) Virtual Tour
      (4) Visiting Colgate
      (5) Admissions Office
      (6) Calendar
      (7) Class Websites
      (8) Libraries
      (9) Departments & Programs
      (10) Office of Undergraduate Studies
      (11) Offices & Services
      (12) Athletic Teams
      (13) Office of Residential Life
      (14) Fraternity & Sorority Affairs
   B. Directions to Colgate
      (1) Campus Map
      (2) Virtual Tour
      (a) Campus Facilities / Hamilton, NY and the surrounding area
   C. Directory & Phonebook
      (1) Admissions
      (2) Admissions Office
      (3) Handbook
      (4) Course Catalog
      (5) Libraries
      (6) Departments & Programs
      (7) Office of Undergraduate Studies
(8) Off-Campus Study
(9) Summer Research Program
(10) Offices & Services
(11) Athletic Teams
(12) Fraternity & Sorority Affairs
(13) Office of Residential Life
(14) Student Organizations
(15) Campus Map
(16) Virtual Tour

(a) Introduction / the campus
(b) Academic life / Academic Programs (Depts)
(c) Academic life / Faculty Involvement and class size
(d) Academic life / Liberal Arts Core curriculum
(e) Student life / Student organizations
   - list of organizations and clubs
(f) Student life / Athletics and Recreation
   - varsity sports
   - Athletic facilities
   - Club sports and intramural athletics
   - Outdoor education
(g) Campus Facilities
   - Residential housing information
   - Computer technology
   - Academic facilities
   - Libraries
   - Dining Halls, Student union and Campus Center Health Services
   - Career and Graduate student opportunities

D. Middle States Self-Study Report
(1) News & Events
(2) Press Releases
(3) Maroon News

E. Student Handbook

(1) Directory & Phonebook
(2) Admissions
(3) Virtual Tour
   (a) Introduction / The campus
   (b) Academic life / Academic programs
      - list of majors
      - off campus study programs
   (c) Academic life / Faculty involvement and class size
   (d) Academic life / Liberal Arts core curriculum
   (e) Academic life / Distributions, Minors, electives and Honors
   (f) Student life / Athletics and Recreation
      - varsity sports
      - athletic facilities
      - club sports and intramural athletics
      - outdoor education
   (g) Student life / Service and leadership opportunities
      - student government
      - campus governance boards
(4) Applying to Colgate
(5) Admissions Office
(6) Frequently Asked Questions
(7) Class Websites
(8) Summer Research Program
(9) Office of Undergraduate Studies
(10) Departments & Programs
(11) Course Catalog
(12) Majors & Minors
(13) Off Campus Study
(14) Athletic Teams

(15) Fraternity & Sorority Affairs

(16) Office of Residential Life

F. Regional Information

(1) Campus Life

(2) Virtual Tour

(a) Introduction / Colgate Traditions

(b) Introduction / the campus

(c) Campus Facilities / Hamilton, NY and surrounding area

2. Admission

A. Office of Admission

(1) Directory & Phonebook

(2) Student Handbook

(3) Student Connection

(4) Frequently Asked Questions

(5) Visiting Colgate

(6) Applying

(7) Campus Map (Bldg, Program/Dept)

(8) Virtual Tour

(a) Introduction / the campus (Office of Admissions)

(b) Academic life / Academic programs / list of majors

(c) Academic life / Liberal Arts core curriculum

(d) Campus Facilities / Career and graduate school opportunities

B. Welcome to Colgate

(1) Student connection

(2) Virtual Tour

(a) Introduction / colgate traditions

(b) Introduction / the campus

(c) Introduction / the students

(d) Campus Facilities / Hamilton, NY and the surrounding area
C. Applying to Colgate
   (1) Admissions Office
   (2) Frequently Asked Questions
   (3) Student handbook
   (4) Calendar
   (5) Departments & Programs
   (6) Majors & Minors
   (7) Office of Undergraduate Studies
   (8) Class Websites
   (9) Campus Map (Bldg, Program/Dept)
   (10) Virtual Tour
       (a) Academic life / Academic program / list of majors
       (b) Academic life / Academic program / off campus study programs
       (c) Academic life / Liberal Arts core curriculum

D. Colgate Student connection
   (1) Welcome
   (2) Frequently Asked Questions
   (3) Admissions Office
   (4) Virtual Tour
       (a) Introduction / the students
       (b) Academic life / Academic programs
       (c) Academic life / Liberal Arts core curriculum
       (d) Student life / Student organization / list of organizations and clubs

E. Frequently Asked Questions
   (1) Student Connection
   (2) Student Handbook
   (3) Admissions Office
   (4) Applying
   (5) Visiting Colgate
   (6) Virtual Tour
(a) Introduction / Colgate Traditions
(b) Introduction / the campus
(c) Introduction / the students
(d) Academic life / Academic programs
(e) Academic life / Faculty Involvement and class sizes
(f) Academic life / Liberal Arts core curriculum
(g) Academic life / distributions, minors, electives and honors
(h) Campus Facilities
   - Residential housing information
   - Computer technology
   - Academic facilities
   - Libraries
   - Dining halls, student union and campus center health services
   - Career and graduate school opportunities
   - Hamilton, NY and the surrounding area

(7) Calendar
(8) Class Websites
(9) Course Catalog
(10) Off Campus study
(11) Summer Research Program
(12) Athletic Teams
(13) Office of Residential Life

F. Virtual Tour (redundant if combined with Site map and Campus map)
   (1) Campus Map
   (2) Admissions Office
   (3) Student Handbook
   (4) Frequently asked questions
   (5) Visiting Colgate
   (6) Calendar
   (7) Class websites
(8) Libraries
(9) Departments & Programs
(10) Office of Undergraduate Studies
(11) Summer Research Program
(12) Offices & Services
(13) Athletic Teams
(14) Fraternity & Sorority Affairs
(15) Office of Residential Life
(16) Student Organizations

G. Visiting Colgate

(1) Campus Map
(2) Virtual Tour
   (a) Introduction / Colgate Tradition
   (b) Introduction / the campus
(3) Frequently asked questions
(4) Admissions Office
(5) Calendar

3. News & Events

A. Calendars [Academic & Campus]

(1) Applying to Colgate
(2) Visiting Colgate
(3) Frequently asked questions
(4) Athletic press releases
(5) Maroon News
(6) Virtual Tour
   (a) Introduction / Colgate traditions
(7) Campus Map
(8) Colgate scene
(9) Summer Research Program
B. Colgate scene

(1) Athletic Press Releases

(2) Calendar

(3) Virtual Tour
   (a) Introduction / Colgate Traditions
   (b) Introduction / The campus
   (c) Introduction / the students
   (d) Student life / Student organizations
      - list of organizations and clubs
   (e) Student life / Service and leadership opportunities
      - student government
      - campus governance board

(4) Campus Map

(5) Departments & Programs

(6) Class Websites

(7) Libraries

(8) Off Campus study

(9) Summer Research Program

C. College Press Releases

(1) Athletic Press Releases

(2) Middle State Self-Study Report

(3) Maroon News

(4) Calendar
(5) Athletic teams
(6) Office of Residential Life

D. Athletics Press Releases

(1) College Press Releases
(2) Maroon News
(3) Calendar
(4) Virtual Tour

(a) Student life / Athletics and recreation
   - varsity sports
   - athletic facilities
   - club sports and intramural athletics
   - outdoor education

(5) Campus Map
(6) Colgate scene
(7) Athletic teams

E. The Maroon News

(1) Middle State Self-Study Report
(2) Virtual Tour
(3) Campus Map
(4) Calendar
(5) College Press Releases
(6) Athletic Press Releases
(7) Athletic teams

4. Academics

   A. Class Websites

   (1) Student handbook
   (2) Off Campus study
   (3) Majors & Minors
   (4) Libraries
(5) Applying to Colgate
(6) Colgate scene
(7) Calendar
(8) Departments & Programs
(9) Frequently asked questions
(10) Summer Research Program
(11) Directory & Phonebook
(12) Campus Map
(13) Virtual Tour
   (a) Introduction / the campus
   (b) Introduction / the students
   (c) Academic life / academic programs
      - list of majors
      - off campus study programs
   (d) Academic life / Faculty involvement and class size
   (e) Academic life / distributions, minors, electives and honors

B. Course Catalog
(1) Class websites
(2) Student handbook
(3) Directory & Phonebook
(4) Frequently asked questions
(5) Calendar
(6) Departments & Programs
(7) Summer Research Program
(8) Office of Undergraduate Studies
(9) Applying to Colgate
(10) Off Campus Study
(11) Majors & Minors
(12) Virtual Tour
   (a) Academic life / Academic programs
- list of majors
- off campus study programs

(b) Academic life / Faculty involvement and class size
(c) Academic life / Liberal Arts core curriculum
(d) Academic life / distributions, minors, electives, and honors

C. Departments & Programs

(1) Course Catalog
(2) Virtual Tour

(a) Introduction / the campus
(b) Academic life / academic programs
- list of majors
- off campus study programs
(c) Academic life / Faculty involvement and class size
(d) Academic life / Liberal Arts core curriculum
(e) Academic life / distributions, minors, electives, and honors
(f) Student life / Athletics and recreation
- varsity sports
- athletic facilities
- club sports and intramural athletics
- outdoor education

(3) Campus Map
(4) Directory & Phonebook
(5) Colgate scene
(6) Summer Research Program
(7) Office of Undergraduate Studies
(8) Off Campus study
(9) Majors & Minors
(10) Libraries
(11) Student Handbook
(12) Class websites
D. Libraries
   (1) Class websites
   (2) Virtual Tour
      (a) Introduction / the campus
   (3) Campus Map
   (4) Directory & Phonebook
   (5) Calendar
   (6) Departments & Programs
   (7) Colgate scene
   (8) Student handbook

E. Majors & Minors
   (1) Student handbook
   (2) Class websites
   (3) Course Catalog
   (4) Applying to Colgate
   (5) Departments & Programs
   (6) Office of Undergraduate Studies
   (7) Off Campus study
   (8) Virtual Tour
      (a) Academic life / Academic programs
         - list of majors
         - off campus study programs
      (b) Academic life / Faculty involvement and class size
      (c) Academic life / Liberal Arts core curriculum
      (d) Academic life / distributions, minors, electives, and honors

F. Off-campus Study
   (1) Student handbook
   (2) Class websites
   (3) Majors & Minors
   (4) Course catalog
(5) Calendar
(6) Departments & Programs
(7) Directory & Phonebook
(8) Campus Map
(9) Virtual Tour
   (a) Introduction / the campus
   (b) Academic life / academic programs / off campus study programs.
   (c) Academic life / Faculty involvement and class size
   (d) Academic life / Liberal Arts core curriculum
   (e) Academic life / distributions, minors, electives, and honors
(10) Office of Undergraduate Studies
(11) Summer Research Program
(12) Colgate scene
(13) Frequently asked questions

G. Office of Undergraduate Studies

(1) Off Campus study
(2) Majors & Minors
(3) Student Handbook
(4) Course catalog
(5) Virtual Tour
   (a) Introduction / the campus
   (b) Academic life / academic programs
      - list of majors
      - off campus study programs
   (c) Academic life / Faculty involvement and class size
   (d) Academic life / Liberal Arts core curriculum
   (e) Academic life / distributions, minors, electives, and honors
(6) Campus Map
(7) Directory & Phonebook
(8) Frequently asked questions
(9) Departments & Programs
(10) Class websites
(11) Applying to Colgate

H. Summer Research Program
(1) Office of Undergraduate Studies
(2) Off Campus Study
(3) Majors & Minors
(4) Student handbook
(5) Class websites
(6) Course catalog
(7) Departments & Programs
(8) Virtual Tour
   (a) Introduction / the campus
   (b) Academic life / academic programs
   (c) Academic life / Faculty involvement and class size
(9) Campus Map
(10) Directory & Phonebook
(11) Frequently asked questions
(12) Calendar
(13) Colgate scene

5. Campus Life
   A. Athletic Teams
      (1) Campus Map
      (2) Virtual Tour
         (a) Introduction / the campus
         (b) Introduction / the students
         (c) Introduction / Colgate traditions
         (d) Student life / Athletics and Recreation
            - Varsity sports
- Athletic facilities
- Club sports and intramural athletics
- Outdoor education

(3) Directory & Phonebook
(4) Student handbook
(5) Frequently asked questions
(6) Calendar
(7) Athletic Press Releases
(8) College Press Releases
(9) Maroon News
(10) Class websites
(11) Departments & Programs

B. Fraternity & Sorority Affairs

(1) Virtual Tour
   (a) Introduction / the students
(2) Directory & Phonebook
(3) Student handbook
(4) Student Organizations

C. Office of Residential Life

(1) Campus Map
(2) Virtual Tour
   (a) Introduction / Colgate Traditions
   (b) Introduction / the students
   (c) Student life / Student organizations
      - list of organizations and clubs
   (d) Student life / Athletics and Recreation
      - varsity sports
      - athletic facilities
      - club sports and intramural athletics
      - outdoor education
(e) Student life / Service and leadership opportunities
    - student government
    - campus governance board

(f) Campus facilities
    - Residential housing information
    - Computer technology
    - Academic facilities
    - Libraries
    - Dining halls, student union and campus center health services
    - Hamilton, NY and the surrounding area

(3) Directory & Phonebook
(4) Student handbook
(5) Frequently asked questions
(6) Calendar
(7) College Press Releases
(8) Student Organizations

D. Personal Pages

E. Student Organizations

(1) Fraternity & Sorority affairs
(2) Office of Residential Life
(3) Virtual Tour
    (a) Introduction / Colgate traditions
    (b) Student life / Student organizations
       - list of organizations and clubs
    (c) Student life / Service and leadership opportunities
       - student government
       - campus governance board

(4) Directory & Phonebook

6. Offices & Services
(1) Campus Map

(2) Virtual Tour
   (a) Introduction / the campus
   (b) Student life / Service and leadership opportunities
       - student government
       - campus governance board
   (c) Campus Facilities
       - Residential housing information
       - Computer technology
       - Academic facilities
       - Libraries
       - Dining halls, student union, and campus center health services

(3) Directory & Phonebook
The first student interview was held at 9:30 a.m. Monday, October 7, 2002 at Community High School. The student interview was arranged by Judy Irwin, school guidance counselor, (734) 994-2027. The student she selected was in the school’s senior portfolio class, a course designed to explore next steps after graduation.

Questions and read aloud portions are in Times New Roman.

Answers are in Arial.

We are a group of students from the Information Visualization course at the U-M School of Information surveying senior high students on their college preparations. We want to know what is important to you as you look for the right college as well as what you hope to see in a college’s Web site.

1. Have you decided which school you will attend in Fall 2003?
   No.

2. What schools are you considering?
   Small liberal arts schools. Earlham, Alma, Hiram (Ohio), Albion.

3. In your consideration of schools, please rank the following on a scale of 1-5.

   3 Academic Reputation
   4 Strength in your area of interest
   4 Cost
   4 Financial Aid
   2 Athletic programs
4. What other factors are important to you?

   Faculty-student ratio, housing options, teaching, lecture v. discussion, why teachers are there (to teach or to do research).

5. We’re interested in how important the following areas are to you for information gathering. Please rank from 1-5 with 5 being very important.

   - School Counseling Office: 5
   - Parents/Friends: 3
   - Paper Information Packets from the school: 3
   - Web sites: 4
   - Campus visits: 5

6. What else?

   College books like the Fiske Guide.

7. What college Web sites have you visited?

   All of those being considered.

8. What kinds of information are college Web sites good for?

   Facts, teacher-student ratio, size, location, nearness to college, pictures of dorm rooms, classes in session

9. Have you taken any virtual campus tours online?

   No.
10. What are the three most important elements of information a college Web site could provide?

1. General info with various departments, professor’s e-mail addresses for contact info
2. Virtual tour
3. Place to apply online

11. Would you like the ability to use a college Web site to:

--Be able to see your three elements all on one page visually.
   Yes.
--Be able to create a mock schedule with courses and extra-curricular activities.
   Yes.
--Be able to map out college costs with and without financial aid.
   Yes.
--Be able to try out sample tests for significant college course
   Maybe.
--Have someone from the college contact you directly about your choices.
   No.
--Make contact with a current student to ask them questions.
   Sort of, if it was optional. I wouldn’t want to get a call out of the blue.

12. What else would you like to be able to use the Web to do with a college Web site?

   Go to the college home page, search for colleges, find mentions in periodicals.

13. What kinds of activities do you usually do online? Also what Web sites do you usually visit?

   Educational activities, exploration, especially in science projects, school, music. It’s an easy way to get quick knowledge.
14. Other comments:

Process: Talk to people, see what they think. Get a list of colleges. Visit each college.
Generate a shorter list. Visit each college’s home page.

Friend has chosen Colgate for its atmosphere, faculty involvement, campus visit.

Thank You!

Colgate University Web site Review / U-M School of Information
College Prep Student Survey / October 2002

The second student interview was held at 8:30 p.m. Monday, October 7, 2002 with a high school senior who had done a campus visit at Michigan State University that day and was staying in Ann Arbor overnight for a U-M visit the next day. The student’s high school is Grand Rapids Catholic Central. He said engineering was his main area of interest.

Questions and read aloud portions are in Times New Roman.

Answers are in Arial.

We are a group of students from the Information Visualization course at the U-M School of Information surveying senior high students on their college preparations. We want to know what is important to you as you look for the right college as well as what you hope to see in a college’s Web site.

1. Have you decided which school you will attend in Fall 2003?
   90% sure that it will be U-M.
2. What other schools are you considering?
   Michigan State, University of Chicago.
3. In your consideration of schools, please rank the following on a scale of 1-5.

4  Academic Reputation
3  Strength in your area of interest
1  Cost
1  Financial Aid
5  Athletic programs
4.5 Social Scene
4  Size
5  Location

4. What other factors are important to you?

  Can’t think of any.

5. We’re interested in how important the following areas are to you for information gathering. Please rank from 1-5 with 5 being very important.

4  School Counseling Office
3  Parents/Friends
1  Paper Information Packets from the school
  I throw these away.
3  Web sites
3  Campus visits

6. What college Web sites have you visited?

  U-M, MSU.

7. What is your favorite college Web site and why?

  MSU’s. It’s easier to use, prettier and has a better layout.
8. What kinds of information are college Web sites good for?

Sports, applications to college, scheduling.

9. Have you taken any virtual campus tours online?

Yes. MSU’s.

10. What are the three most important elements of information a college Web site could provide?

1. Sample schedule
2. How much credit awarded for AP tests.
3. How to apply
4. How to schedule a visit.
5. Sports info.
Appendix F: Web Survey -- Freshman Students, University of Michigan

A web survey was conducted over three days, in which responses were elicited from a range of freshman students at the University of Michigan. Their responses were compiled into the following graphs which

Going to College

Web Survey

This survey is part of a project for a class at the University of Michigan School of Information. Our project is to design new ways to present information on a college website. The information gathered from this survey will be used to narrow our focus. Disclaimer: By taking the following survey, you are 18 years old and that you are giving consent for your answers to be included in a research study.

How often do you use the Internet?

- Never
- Once a year
- Every couple of months
- Monthly
- Twice a month
- Weekly
- 2-3 times a week
- Daily

Do you attend:

- Public High School
- Private High School
- Home School

Are you looking at: (check all that apply)

- Public Universities/Colleges
• Private Universities/Colleges
• Community Colleges
• Trade Schools
• Virtual Universities/Colleges
• Not Attending College

How many schools are you considering?
• 1-3
• 4-6
• 7-9
• 10-12
• 13-15
• 16-18
• 19-21
• 22+

What are you using to investigate possible schools? (check all that apply)
• Campus Visits
• Brochures/Mailings
• Websites
• College Fairs
• Current Students
• College Recruiters
• High School Counselor
• Parents
• Other

Which do you find most helpful?
• Brochures/Mailings
• Websites
• Campus Visits
• College Fairs
• Currents Students
• College Recruiters
• High School Counselor
• Other

How many school websites have you looked at?

• 1-3
• 4-6
• 7-9
• 10-12
• 13-15
• 16-18
• 19-21
• 22+

How many virtual tours have you looked at?

• 1-3
• 4-6
• 7-9
• 10-12
• 13-15
• 16-18
• 19-21
• 22+
How much do you agree with the following statements:
(for results, please refer to Appendix G)

The available academic programs and course offerings are important in a college/university.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

The cost of attendance and available financial aid are important in a college/university.

- Agree
- Strongly Disagree
- Disagree
- Strongly Agree

Diversity is important in a college/university.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

The entrance requirements are important in a college/university.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

The reputation of a college/university is not important.

- Disagree
- Strongly Disagree
- Agree
- Strongly Agree
The location of a college/university is not important.
- Disagree
- Strongly Disagree
- Agree
- Strongly Agree

The social scene is important in a college/university.
- Disagree
- Strongly Disagree
- Agree
- Strongly Agree

Student organizations are not important in a college/university.
- Disagree
- Strongly Disagree
- Agree
- Strongly Agree

Sports are important in a college/university.
- Disagree
- Strongly Disagree
- Agree
- Strongly Agree

The religious affiliation of a college/university is important.
- Agree
- Strongly Disagree
- Disagree
- Strongly Agree
The faculty to student ratio is important in a college/university.

- Agree
- Strongly Disagree
- Disagree
- Strongly Agree

The available research/work opportunities are not important in a college/university.

- Disagree
- Strongly Disagree
- Agree
- Strongly Agree

The size of a college/university is important.

- Agree
- Strongly Disagree
- Disagree
- Strongly Agree
Appendix G: Target Audience

Our target audience spans two distinct groups, prospective students and parents. Within the student group are combined the highschool student, the transfer student, and the non-traditional student. It is believed that the non-traditional student may be close in task path to the parent group since this is often a returning and older student. Personae were created to cover the highschool student, the transfer student, and the parent group (see Appendix B). By creating scenarios based on these three types, we generated a list of requirements that would drive the creation of useful and usable information visualizations.

User Characteristics: Note that the target group has been narrowed to prospective students.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Potential User Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Size of user group:</strong> national and international population</td>
<td></td>
</tr>
<tr>
<td>Age range: 17 and older</td>
<td>The younger age group will have a short attention span. Download times need to be optimized. Also requires an element of entertainment value.</td>
</tr>
<tr>
<td>Gender: male and female</td>
<td>if possible, use equal numbers of female and male users in trials.</td>
</tr>
<tr>
<td>Language and culture: English will be the main language.</td>
<td>Use English language. Use language comparable to highschool level where appropriate. Use of high level “glitz” should be targeted to personalized elements, e.g. Flash multimedia presentations.</td>
</tr>
<tr>
<td>Educational level/qualifications: highschool and above</td>
<td>Design to be usable for highschool level.</td>
</tr>
<tr>
<td>Special skills: none</td>
<td></td>
</tr>
<tr>
<td>Experience with similar systems: 100% of users will have basic skills in browser use.</td>
<td>Try to provide a balance of standard browser elements (e.g. collapsable index tree) with information visualizations to prevent user information overload.</td>
</tr>
<tr>
<td>IT experience: assume none</td>
<td>Use supportive dialogue and pop-ups to increase user comfort. Develop attractive, clean interfaces.</td>
</tr>
<tr>
<td>Knowledge of task: variable, assume none.</td>
<td>Create a highly supportive interface with a clear logical structure to facilitate navigation of data. Use terms the target user will understand.</td>
</tr>
<tr>
<td>Previous training: none</td>
<td></td>
</tr>
<tr>
<td>Frequency of use: first-time users, a percentage of these will become return users.</td>
<td>Use supportive dialogue and directed graphics (e.g. add introductory text to indicate entry points when necessary). Memory enhancements may be developed using visualizations. Service must be easy to learn and remember.</td>
</tr>
<tr>
<td>Motivation to use: moderately motivated as a means of browsing the site.</td>
<td>Make service attractive, informative, and fun. Ensure results can be achieved quickly.</td>
</tr>
<tr>
<td>Discretion to use: Can the user use alternate methods to obtain the same information if desired?</td>
<td>Provide alternate paths through traditional browser linking and content categories.</td>
</tr>
<tr>
<td>Likely concerns: unable to navigate to previous information or to required information.</td>
<td>Make service easy to use and provide supportive dialogue/help.</td>
</tr>
<tr>
<td>Other relevant characteristics: wish to provide the most information in an intuitive interface.</td>
<td>The goal is to increase precision without sacrificing recall. Need to provide the user with visualizations that provide clues as to the precision of a particular packet of data, e.g. weight of hyperbolic node to query.</td>
</tr>
</tbody>
</table>

2. User Needs: Students

Many website features point to a set of standard questions (Selecting a university | Study in the US. Found World Wide Web, October 2002. http://www.fulbright.org.nz/studyus/selectuni.html) students are encouraged to ask of a prospective institution:
• cost and availability of financial aid
• accreditation
• academic facilities
• type of institution - public or private, co-ed or single sex, etc.
• enrollment size
• campus setting and geographical location
• sports and campus life
• housing
• services for international students

Suggested paths to track down information of interest range from the registrar’s pages to see if many classes have lengthy waiting lists, using the internal search engines of some college sites to find student evaluations of professors (e.g. course evaluations at www.princeton.edu/usg/), e-mailing faculty and students at a university with questions about everything from academics to social life (Allegheny College chat room for potential students to log in with a code name and query professors and admissions officers in real time (usnews.com: America’s Best Colleges 2003: Digging for pay dirt on... Found World Wide Web, October 2002. http://www.usnews.com/usnews/edu/college/articles/brief/03surf_brie...). College newspapers are recommended resources for inside information on what goes on at many schools (http://www.collegenews.com/news.htm). For information on graduate successes, students are told to look through alumni magazines; e.g. a sampling appears in the resources section of www.lipmanhearne.com (usnews.com: America’s Best Colleges 2003: Digging for pay dirt on... Found World Wide Web, October 2002. http://www.usnews.com/usnews/edu/college/articles/brief/03surf_brie...)

An analysis of 242 messages on the Princeton Review Discussion Board (from 9/1/2002 - 12/1/2002) shed insight into the information needs of prospective students. The most popular discussion thread related to a comparison of Colgate University and “Ivy League” schools. Overall, prospective students sought advice on their likelihood of acceptance to Colgate University, comparison of Colgate to other schools based on features that they were personally interested in, and confirmation from other prospective
students that information provided by Colgate was accurate.

Based on the above information, a series of questions (see Appendix E) were prepared for surveying 18-year-olds preparing for college. The following opinions were established through speaking with students at a local Michigan highschool and a web survey of University of Michigan freshman:

- 78% of respondents strongly agreed that information on available academic programs and course offerings was important.
- 60% agreed that the cost of attendance and financial aid was important.
- 64% agreed that the entrance requirements were important.
- 54% agreed that the reputation of a university was important.
- 72% agreed that university location was an important factor.
- 68% agreed that social scene was important.
- 80% agreed that student organizations were important.
- 58% agreed that sports were important.
- 70% agreed that faculty to student ration was important.
- 60% agreed that available research/work opportunities was important.
- 70% agreed that the size of the institution was important.
- 44% disagreed that the religious affiliation of a university was important.

3. User needs: Parents


In a collection of direct statements, parents (all personal information has been scrubbed from the site) advise in terms of their varied experiences:

- “There is an enormous amount of information available on the college websites. If you’re concerned about class sizes, for example, the registrar’s website frequently gives class enrollments, and instructor name. You can then get an idea of who is actually teaching the classes, a professor or a grad student.”
- “Use the college website to find the name of the department head for a department you are particularly interested in. You can email with specific questions to determine how it would meet your child’s needs.”
• On the US News Annual Ratings:
  One response:” Forget ‘em.  Many of the important things you want to know about a college are
  not quantifiable.”  Another: “Useful for facts, but less so for the ratings themselves.”  Available
  online at  http://www.usnews.com/

• “BCC offers seminars for parents of seniors that Junior parents may also be interested in. Never
  too soon.”

• “Remember: any piece of information is simply the opinion of one person who may or may not
  have the same sensibilities of you or your child. Nothing substitutes for the evaluation you make
  for yourself when you visit a school.”

• “I found that using multiple sources simultaneously worked best. If my daughter read just one
  book at a time it was hard to not be unduly influenced by unfavorable comments. You can find
  balance by getting several opinions at once.”

• “Many students fall into the trap of picking colleges that they have a less than 50% chance
  of getting into. Instead, they should concentrate on those where their chances are much more
  favorable.”

**Parent User Goals**

Based on the chat archives, personae and scenarios, the following user goals were generated for the
parent group:

• To determine safety and other issues facing incoming highschool students, in and around Colgate
  University.

• To find and understand the basic information on finances, housing, safety issues, in addition to
  academics.
<table>
<thead>
<tr>
<th>Category</th>
<th>Task step</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Scene</td>
<td>What kind of things do students do besides classroom?</td>
</tr>
<tr>
<td></td>
<td>What do students do to have fun?</td>
</tr>
<tr>
<td></td>
<td>Is there Ultimate Frisbee?</td>
</tr>
<tr>
<td></td>
<td>What are the sororities like and does one have to join a sorority?</td>
</tr>
<tr>
<td></td>
<td>Where can one go to play drums? The band; Small groups?</td>
</tr>
<tr>
<td>Academies</td>
<td>Find out about the biology program, rating and research.</td>
</tr>
<tr>
<td></td>
<td>How good is the biology program?</td>
</tr>
<tr>
<td></td>
<td>What kind of research is being done?</td>
</tr>
<tr>
<td></td>
<td>What are the sororities like and does one have to join a sorority?</td>
</tr>
<tr>
<td></td>
<td>What types of opportunities exist for drummers?</td>
</tr>
<tr>
<td></td>
<td>Who's teaching the courses, professors or graduate students?</td>
</tr>
<tr>
<td></td>
<td>How big are the classes?</td>
</tr>
<tr>
<td></td>
<td>How much laboratory time is connected with coursework?</td>
</tr>
<tr>
<td></td>
<td>What opportunities are there to study abroad?</td>
</tr>
<tr>
<td></td>
<td>What locations are offered?</td>
</tr>
<tr>
<td>Finances</td>
<td>How does one get accepted to Colgate University?</td>
</tr>
<tr>
<td></td>
<td>Is there special requirements for biology major?</td>
</tr>
<tr>
<td></td>
<td>Is there an online application?</td>
</tr>
<tr>
<td></td>
<td>How much does applying cost?</td>
</tr>
<tr>
<td></td>
<td>How much does it cost?</td>
</tr>
<tr>
<td></td>
<td>How does one apply?</td>
</tr>
<tr>
<td></td>
<td>How much is housing and food?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Decomposition</th>
<th>Problem.Task variation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Definition of “fun” – possible entry points are “Campus Life” – “General Information” – “Information for Students” – “Search” (keywords: fun, social events, sports, music, “Campus Life/Personal Pages”).</td>
</tr>
<tr>
<td></td>
<td>How to rank “play” against “academic requirements”? Possible entry point is “Campus Life/Personal Pages.”</td>
</tr>
<tr>
<td></td>
<td>Natural language terminology need in search. Search function should categorize metadata in terms of “conceptual ideas,” not always actual terms. User should be able to weight different ideas by “how much fun” the ideas might be to the user.</td>
</tr>
<tr>
<td></td>
<td>Information on sororities and Greek FAQs are four levels below the main webpage. Information scent needs to be improved between levels 2 and 4.</td>
</tr>
<tr>
<td></td>
<td>User needs to acquire a personalized view of “play vs academic.” Presentation of actual cases would fulfill this requirement.</td>
</tr>
<tr>
<td></td>
<td>High granularity may not be possible considering the scope of this website.</td>
</tr>
<tr>
<td></td>
<td>High granularity may not be possible considering the scope of this website.</td>
</tr>
<tr>
<td></td>
<td>Subjective question is dependent on the user’s varied needs. Possible entry points are “Academics/Departments &amp; Majors,” “Academics/Class Web sites,” “Academics/College Booklet,” “Search” (keywords: biology).</td>
</tr>
<tr>
<td></td>
<td>Rating an object requires a broad range of quantitative (type and number of offerings) and qualitative data (personal opinions, examples of teaching and learning situations). Results may require some type of weighting in order to formulate a comprehensive decision on “good.”</td>
</tr>
<tr>
<td></td>
<td>Information scent appears under “Academics/Biology” in “Summer Undergraduate Research Program,” however this is not the appropriate scent to answer the query. Providing a single scent containing results of the various research opportunities.</td>
</tr>
<tr>
<td></td>
<td>Specific query on biological research. Possible entry points are “Academics/Departments &amp; Majors,” “Search” (keywords: biological research, research, cancer research).</td>
</tr>
<tr>
<td></td>
<td>Information scent not apparent till the user has clicked from “Academics” to browse across the resulting webpage. Aloner route would be to follow the scent through the academic department listings; however, the resulting instructor name is given no additional information to verify status or to provide email. Ability to access instructor names through “Academics/College Booklet.” Verification of faculty status and precision of email address from “College Booklet.”</td>
</tr>
<tr>
<td></td>
<td>No “information scent” readily apparent from the homepage. Possible entry points are “Academics/Departments &amp; Majors,” “Search” (keywords: biological research, student research, research, cancer research).</td>
</tr>
<tr>
<td></td>
<td>Clue information is accessed through the Academics/College Booklet specific course listings course information. Again, the user would need to be aware of the type of information kept by the College Booklet.</td>
</tr>
<tr>
<td></td>
<td>Specific query tied to a class schedule. Possible entry points are “Academics/Departments &amp; Majors,” “Search” (keywords: biology laboratory, biology class, laboratories). This can be answered either by the number of hours listed under the particular course in the Course Booklet, or by a personal interview of a student talking about a particular class and work expectations. The second part of this subject is subjective and should give not only particular attitude toward the course and instructors.</td>
</tr>
<tr>
<td></td>
<td>Specific question tied to a class schedule. Possible entry points are “Academics/Departments &amp; Majors,” “Search” (keywords: biology laboratory, biology class, laboratories). Meta data for the exchange programs do not use this particular system (Search results = 0). All information for exchange programs are maintained under the particular department website. Again, metadata needs to be classified by context and semantics.</td>
</tr>
<tr>
<td></td>
<td>Specific question not tied to a specific department. Possible entry points are “Academics/Departments &amp; Majors,” “Search” (keywords: biology laboratory, biology class, laboratories). Meta data for the exchange programs do not use this particular system (Search results = 0). All information for exchange programs are maintained under the particular department website. Again, metadata needs to be classified by context and semantics.</td>
</tr>
<tr>
<td></td>
<td>Specific query that covers a wide range of information. Possible entry point is “Admission &amp; Aid/Office of Admission,” “Information for Applying to Colgate,” “Search” (keywords: Admission requirements, “Admission requirements”).</td>
</tr>
<tr>
<td></td>
<td>Admission requirements are listed two levels down from the main page and a direct link to topics covering admission. Text information does not provide for specific examples of what the actual requirements, e.g., application essay, look like, nor does the information clearly outline the requirements in easily accessible formats like lists and examples. The admission requirements have a time element associated with them, specific documents are required by set dates. Reminders and associated dates are not apparent.</td>
</tr>
<tr>
<td></td>
<td>Specific query covering a departmental requirement that may not be listed under general Admissions. Possible entry points are “Admission &amp; Aid/Office of Admission,” “Academics/Departments &amp; Majors,” “Information for Applying to Colgate,” “Search” (keywords: Admission, requirements, biology admission).</td>
</tr>
<tr>
<td></td>
<td>A search for “online application” sends the user off site to a website that obviously handles any type of college and high school application forms. This removes the user from the other pertinent information necessary to admission requirements. A provision for maintaining all other information associated with a query is important.</td>
</tr>
<tr>
<td></td>
<td>Specific query “application fee.” Possible entry points are “Admission &amp; Aid/Office of Admission,” “Information for Applying to Colgate,” “Search” (keywords: application, online application).</td>
</tr>
<tr>
<td></td>
<td>Information is contained three levels below the main page. Search is text driven, requiring scrolling and user memory (and lots of paper to take notes).</td>
</tr>
<tr>
<td></td>
<td>How much does applying cost? Possible entry points are “Admission &amp; Aid/Office of Admission,” “Information for Applying to Colgate,” “Search” (keywords: application fee).</td>
</tr>
<tr>
<td></td>
<td>Four levels from the main page, following links under “Information for Students” results in a page listing the cost of tuition, board, etc. Problematic is the correlation to an individual’s potential awards, the type of grants that could apply, student work-study, costs due to special needs, etc. This information is not rendered accessible in the same window to facilitate a more accurate cost of admission. Corresponding award dates and applications are not made available.</td>
</tr>
<tr>
<td></td>
<td>Four levels from the main page, following links under “Information for Students” results in a page listing the cost of tuition, board, etc. Problematic is the correlation to an individual’s potential awards, the type of grants that could apply, student work-study, costs due to special needs, etc. This information is not rendered accessible in the same window to facilitate a more accurate cost of admission. Corresponding award dates and applications are not made available.</td>
</tr>
<tr>
<td>Category</td>
<td>Task step</td>
</tr>
<tr>
<td>----------</td>
<td>-----------</td>
</tr>
<tr>
<td>University Characteristics</td>
<td>How much for extra?</td>
</tr>
<tr>
<td></td>
<td>How does it compare with Cornell and Dartmouth?</td>
</tr>
<tr>
<td></td>
<td>Where is it located?</td>
</tr>
<tr>
<td></td>
<td>What kinds of other places are near it?</td>
</tr>
<tr>
<td></td>
<td>What kind of student goes to Colgate?</td>
</tr>
<tr>
<td></td>
<td>What does one do about making a visit?</td>
</tr>
<tr>
<td></td>
<td>Who does one talk to about scheduling a visit?</td>
</tr>
<tr>
<td></td>
<td>What does one do during a visit?</td>
</tr>
<tr>
<td></td>
<td>Where does Colgate fit in the rankings?</td>
</tr>
<tr>
<td></td>
<td>What other sources of information are there?</td>
</tr>
<tr>
<td></td>
<td>Are there reliable sources of information about the school?</td>
</tr>
</tbody>
</table>
## Appendix I: Data Matching

<table>
<thead>
<tr>
<th>Decomposition</th>
<th>Potential user requirement</th>
<th>Data type</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do students do to have fun?</td>
<td>Natural language terminology used in searching. Search function should categorize metadata in terms of “conceptual ideas”, not always actual terms. User should be able to weight different ideas by “how much fun” the ideas/topics would be to the user.</td>
<td>Semantic Networks to cluster metadata under conceptual categories (one to many matches); Subjective weighting of categories.</td>
<td>clustering -- Treemap, Themescape, Galaxy; weighting -- parallel coordinates, slide bars</td>
</tr>
<tr>
<td>Do students play as hard as they work?</td>
<td>User needs to acquire a personalized view of “play vs academics”. Presentation of actual cases would fulfill this requirement.</td>
<td>multimedia(digital audio/video)</td>
<td></td>
</tr>
<tr>
<td>What are the sororities like and does one have to join a sorority?</td>
<td>Information on sororities and Greek FAQs are four levels below the main webpage. Information scent needs to be improved between levels 2 and 4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Where can one go to play drums? The band? Small groups?</td>
<td>High granularity may not be possible considering the scope of this website.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there Ultimate Frisbee?</td>
<td>High granularity may not be possible considering the scope of this website.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How good is the biology program?</td>
<td>Rating an object requires a broad range of quantitative (type and number of offerings) and qualitative data (personal opinions, examples of teaching and learning situations). Results may require some type of weighting in order to formulate a comprehensive decision on “good”.</td>
<td>Clustering disparate information; subjective weighting of information.</td>
<td>clustering -- Treemap, Themescape, Galaxy; weighting -- parallel coordinates, slide bars</td>
</tr>
<tr>
<td>What kind of research is being done?</td>
<td>Information scent appears under Academics/Biology as “Summer Undergraduate Research Program”, however this is not the appropriate scent to answer the query. It would serve to provide a single scent containing residue of the various research opportunities.</td>
<td>Search by concept in order to cluster the appropriate data and increase recall since research is under a variety of departmental classes.</td>
<td>clustering -- Treemap, Themescape, Galaxy.</td>
</tr>
<tr>
<td>When can a student work at real research?</td>
<td>Qualitative designation of “real”. The connotation would be research that involved a recognizable problem under the guidance of a researcher. Connection to Internet links for context of “real” would be appropriate for access to publications and awards.</td>
<td>Subjective term (Natural language problem). Again, use of concept searching to cluster related data would be the appropriate response.</td>
<td>clustering -- Treemap, Themescape, Galaxy.</td>
</tr>
<tr>
<td>Who’s teaching the courses, professors or graduate students?</td>
<td>Information scent not apparent till the user has clicked from “Academics” to browse across the resulting webpage. A longer route would have been to follow the scent through the actual department listings, however, the resulting instructor name is given no additional information to verify status or to provide email. Able to access instructor names through “Academics/Course Booklet”. Verification of faculty status and provision of email address from “Course Booklet”.</td>
<td>Increase scent among related components of information: Academics/Class --Class size, Class Description, Instructor -- Instructor background (including email).</td>
<td></td>
</tr>
<tr>
<td>How big are the classes?</td>
<td>Class information is accessed through the Academics/ Course Booklet/[specific course listing]/course information. Again, the user would need to be aware of the type of information kept by the Course Booklet.</td>
<td>Increase scent among related components of information: Academics/Class --Class size, Class Description, Instructor -- Instructor background (including email).</td>
<td></td>
</tr>
<tr>
<td>How much laboratory time is connected with coursework?</td>
<td>This can be answered either by the number of hours listed under the particular course in the Course Booklet, or by a personal interview of a student talking about a particular class and work expectations. The second part of this answer is subjective and should give not only particulars but attitudes toward the course and instructors.</td>
<td>Subjective and objective (time) information as related to a topic (general or specific); clustering of information related to query must include testimonials (multimedia).</td>
<td>clustering -- Treemap, Themescape, Galaxy; interactive multimedia may use weighting in order to provide user with a clearer choice of what information should be accessed if more than one choice exists.</td>
</tr>
<tr>
<td>Is there an exchange program?</td>
<td>Metadata for the exchange programs do not use this particular synonym (Search results = 0). All information listed for exchange programs are maintained under the particular department website. Again, metadata needs to be classified by context and semantics.</td>
<td>Search by concept in order to cluster the appropriate data and increase recall since research is under a variety of departmental classes.</td>
<td>Natural language searching; clustering -- Treemap, Themescape, Galaxy.</td>
</tr>
</tbody>
</table>
### Appendix I: Data Matching (cont’d)

<table>
<thead>
<tr>
<th>Decomposition</th>
<th>Potential user requirement</th>
<th>Data type</th>
<th>Information Visualizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the admission requirements?</td>
<td>Admission requirements are listed two levels down from the main page and a direct link to topics covering admissions. Text information does not provide for appropriate examples of what the actual requirements, e.g. application essay, look like, nor does the information clearly outline the requirements in easily accessible formats like lists and examples. The admission requirements have a time element associated with them; specific documents are required by set dates. Reminders and associated dates are not apparent.</td>
<td>Large amount of data associated with a time requirement.</td>
<td>Time -- use of line graphs to facilitate document submission; explanation of associations between documents and time constraints -- line graph and time series (co-occurrence); clustering of multiple documents for easy access -- Treemap, Themescape, Galaxy.</td>
</tr>
<tr>
<td>Are there special requirements for a biology major?</td>
<td>No information is evident from the Academics page that specific disciplines have increased requirements.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there an online application?</td>
<td>A search for “online application” sends the user off-site to a website that obviously handles any type of college and highschool application form. This removes the user from the other pertinent information necessary to admission requirements. A provision for maintaining all other information associated with a query is important.</td>
<td>Maintain site presence through use of frames or by providing the appropriate document within the University page.</td>
<td></td>
</tr>
<tr>
<td>How much does applying cost?</td>
<td>Information is contained three levels below the main page. Search is text driven, requiring scrolling and user memory (and lots of paper to take notes).</td>
<td>Use of xml would provide generation of unique pages containing more precise information to the user.</td>
<td></td>
</tr>
<tr>
<td>How much does it cost?</td>
<td>Four levels from the main page, following links under “Information for Students” results in a page listing the cost of tuition, board, etc. Problematic is the correlation to an individual’s potential awards, the types of grants that could apply, student work-study, costs due to special needs, etc. This information is not rendered accessible in the same window to facilitate a more accurate cost of admission/tuition. Corresponding award dates and applications are not made available.</td>
<td>Varying data types need to be integrated, first by clustering the access points (e.g. tuition, work study, grants, etc), then be providing the user a way to manipulate the data in order to see the effects of various data on the whole (e.g. total tuition as affected by changing housing costs, participation or non-participation in work study, etc).</td>
<td>clustering -- Treemap, Themescape, Galaxy; data manipulation -- interactive bar charts, histograms, calculators.</td>
</tr>
<tr>
<td>How does one apply?</td>
<td>Application process is listed three levels down from the main page. Information is separated into standard chunks, e.g. “Application Procedures”, “International Student Admission”, “Admission Requirements”, etc. This is a process that would benefit from an interactive walk-through, checklist of requirements.</td>
<td>Similar to a software tutorial or help aid. Interactive walkthrough of process with use of time line.</td>
<td>Time -- line graph/time series; integrate with document submission to provide feedback on receipt and acceptance of user forms.</td>
</tr>
<tr>
<td>How much is housing and food?</td>
<td>Four levels from the main page, following links under “Information for Students” results in a page listing the cost of tuition, board, etc. Problematic is the correlation to an individual’s potential awards, the types of grants that could apply, student work-study, costs due to special needs, etc. This information is not rendered accessible in the same window to facilitate a more accurate cost of admission/tuition. Corresponding award dates and applications are not made available.</td>
<td>Varying data types need to be integrated, first by clustering the access points (e.g. tuition, work study, grants, etc), then be providing the user a way to manipulate the data in order to see the effects of various data on the whole (e.g. total tuition as affected by changing housing costs, participation or non-participation in work study, etc).</td>
<td>clustering -- Treemap, Themescape, Galaxy; data manipulation -- interactive bar charts, histograms, calculators.</td>
</tr>
<tr>
<td>How much for extras?</td>
<td>A user would benefit from compiling information on potential classes which would result in the cost of extras, e.g. lab fees, books, equipment rentals, etc.</td>
<td>Preset, interactive class schedule with information regarding pertinent costs associated with the class (e.g. books, lab fees, etc). This would require clustering information of the various resources in order to devise the schedule. User should be provided with a means to interact with the data referring to cost and schedule to obtain a satisfactory result.</td>
<td>Patterns associated with specific disciplines could be displayed using a Table lens to drill into a pre-set, interactive schedule. Time lines would provide potential substitutes of classes. Cost interaction would be provided by bar graphs or histograms to give overall affects of changes in schedule.</td>
</tr>
<tr>
<td>How does it compare with Cornell and Dartmouth?</td>
<td>Comparing competitive institutions may be out of the scope of this project.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Where is it located?</td>
<td>Ability to see both global and local targets, to make correlations between buildings and various departments. Additional information resulting from the ability to interact and “tour” the buildings on-line would provide an initial impression to promote an actual visit.</td>
<td>Ability to maintain campus view while zooming into target point could be used to provide the user, not only with a local view -- e.g. a building panorama, but also with a menu of related information.</td>
<td>Zooming -- multiscale media map; clustering of associated data via Themescapes, Galaxies; affinity between associated data could also be presented by a node-link diagram.</td>
</tr>
</tbody>
</table>
## Appendix I: Data Matching (cont’d)

<table>
<thead>
<tr>
<th>Decomposition</th>
<th>Potential user requirement</th>
<th>Data type</th>
<th>Information Visualizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>What kinds of other places are near it?</td>
<td>Ability to see both global and local targets, to make correlations between buildings and various departments. Additional information resulting from the ability to interact and &quot;tour&quot; the buildings on-line would provide an initial impression to promote an actual visit.</td>
<td>Ability to maintain campus view while zooming into target point could be used to provide the user, not only with a local view -- e.g. a building panorama, but also with a menu of related information.</td>
<td>Zooming -- multiscale media map; clustering of associated data via Themescapes, Galaxies; affinity between associated data could also be presented by a node-link diagram.</td>
</tr>
<tr>
<td>What kind of student goes to Colgate?</td>
<td>Interaction with &quot;real students&quot; participating in activities of interest. Information on those activities, e.g. swimming, biology, should be easily accessible.</td>
<td>Subjective information, a need to provide a &quot;feel&quot; for the students and campus. Testimonials are appropriate linked to user’s points of interest. Use of interactive multimedia appropriate.</td>
<td></td>
</tr>
<tr>
<td>What does the campus look like?</td>
<td>Ability to see both global and local targets, to make correlations between buildings and various departments. Additional information resulting from the ability to interact and &quot;tour&quot; the buildings on-line would provide an initial impression to promote an actual visit.</td>
<td>Ability to maintain campus view while zooming into target point could be used to provide the user, not only with a local view -- e.g. a building panorama, but also with a menu of related information.</td>
<td>Zooming -- multiscale media map; clustering of associated data via Themescapes, Galaxies; affinity between associated data could also be presented by a node-link diagram.</td>
</tr>
<tr>
<td>Who does one talk to about scheduling a visit?</td>
<td>Visitation information is two levels below the main page. Information scent is moderate since the link requires the user to know that visitation information is under &quot;Admissions&quot;. Presentation of information could be improved by maintaining all information within one page. Current links move the user outside the text information to view an enlarged view of maps. Zooming and panning functions, as well as embedded information that is searchable would improve access and use.</td>
<td>Increase information scent of &quot;visit&quot;. Ability to maintain campus view while zooming into target point could be used to provide the user, not only with a local view -- e.g. a building panorama, but also with a menu of related information.</td>
<td>Zooming -- multiscale media map; clustering of associated data via Themescapes, Galaxies; affinity between associated data could also be presented by a node-link diagram.</td>
</tr>
<tr>
<td>What does one do during a visit?</td>
<td>Suggestions of various activities are listed, however, this could be improved by making it possible to examine potential interests directly from the page, or by providing pre-set itineraries according to interest, e.g. athletics, biology, social sciences, etc. Time limitations are apparent for visits during the calendar year, i.e. specific dates are not available, and for visits to actual teaching environments.</td>
<td>Provide pre-set lists of activities which may be adjusted by the user for personal interests not covered. Information regarding personal interests would require clustering, possible using concept search versus term search. All data needs to be set against a time line as well as a campus map in order to adjust for distance and schedule conflicts.</td>
<td>clustering of variable topics -- Themescapes, Galaxies; time -- line graph/time series (co-occurrence); zooming -- multiscale capacity across co-occurring elements.</td>
</tr>
<tr>
<td>Where does Colgate fit in the rankings?</td>
<td>This information is not found. A page informing prospective students and parents of the University’s national ranking and other achievements should be prominently displayed as part of &quot;branding&quot;. This information then needs to be weighted by the user against other types of information on which application submission is being based.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What other sources of information are there?</td>
<td>Various types of data require weighting in order to facilitate a decision by a prospective student. All information should be compiled in one location for viewing.</td>
<td>The user will be compiling disparate groups of data which will be need to be weighted and viewed within specified context (e.g. finances) as well as globally (e.g. overall “likes”)</td>
<td></td>
</tr>
<tr>
<td>Are these reliable sources of information about the school?</td>
<td>Testimonials may be provided but may have only partial legitimacy unless the individual carries social collateral.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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*Note:* The text content is extracted from the document and formatted into a table for clarity. The full context and details are beyond the scope of this representation.

Visibility of system status
During the user’s entire experience on the Colgate University website, the hyperbolic browser will indicate the user’s location and what information is located “adjacent” (relative to content) to his/her current position.

Match between system and the real world
The language used within the information visualization or hyperbolic browser will be in the user’s language, the words, phrases and concepts will be familiar to the user, using common terminology found within all university and college related literature (i.e. academics, financial aid).

User control and freedom
Since the hyperbolic browser as a form of navigation may be new to users there will be a function available for users to “undo” his/her search. This “undo” function will be like the history function found in most browsers so the user can return to past searches.

Consistency and standards
The hyperbolic browser will not invent its own language convention for common platform tasks; it will follow platform conventions.

Error prevention
To prevent search results that contain no or irrelevant information, searches will use synonym rings, common misspelling lists, and thesauri to add in a more complete search.

Recognition rather than recall
To prevent the user from bearing the load of remembering more information that he/she needs to, breadcrumb navigation will be provided on each page to give the user bearings of his/her location within the website.
**Flexibility and efficiency of use**

The NotePad function of the website will allow users to save URLs, images, text passages, etc. This NotePad will be durable so that users will be able to refer to it on repeat visits to the Colgate University website as well as when they visit other websites. While the NotePad provides the convenience of storing information in one location, it also acts as a short cut for more advanced users.

**Aesthetic and minimalist design**

The hyperbolic browser will not display all possible areas of information available on the Colgate University website, but the current location of the user as well as two levels of related information.

**Help users recognize, diagnose, and recover from errors**

If a user searches for a term that does not have any results, suggestions for improving searching will be displayed.

**Help and documentation**

A help button will lead users to a short tutorial for the hyperbolic browser as well as a FAQ regarding its use.