

BEDSIDE MANNER

DEVELOPING A METHODOLOGY FOR EXPERIENCE DESIGN FOR STUDENT HEALTH CENTERS

ABSTRACT:

Open communication between a patient and doctor is critical to the quality of care and the effectiveness of medical treatments. However, in student health centers in the United States, there are often age, gender, culture, and socio-economic gaps between the health care provider and the student constituents. The goal of this research is to investigate ways of creating a user experience that better targets the emotional, social, and behavioral needs of college students for the purpose of improving health related outcomes and communication between the medical providers and the students. This paper will discuss a pilot study conducted in the United States at the Thielen Student Health Center, a primary care clinic serving a university of 26,000 students at Iowa State University, in Ames, Iowa. A combination of ethnographic, quantitative, and qualitative measures will be discussed with regard to their effectiveness as an experience design research methodology.

I. RESEARCH SUMMARY

Quality health care in the United States is highly dependent on a patient's ability to effectively communicate and advocate for themselves or on behalf of someone else with their healthcare providers. Often times in healthcare facilities there are policies in place that are meant to mediate the patient/medical provider relationship; however, just setting policies does not address the social, emotional, or behavioral aspects of this relationship. The first phase of this research developed a methodology using a combination of ethnographic, qualitative and quantitative measures for evaluating the quality of a healthcare experience. The second phase of the research applied the methodology and correlated that to the design of healthcare experiences based on the data-driven process developed in phase one. The ultimate goal of the research is to seek ways to improve the experience design of a medical facility as determined by patient expectations of the facility, the level of satisfaction with subsequent medical treatment, and the quality of the communication and advocacy process between the patient and the medical providers.

Experience design looks at all aspects of the communication process. It examines all types of print and electronic communication, how well the physical space and medical facilities meet the needs of the patients and medical providers, and the quality of the interpersonal communications from the first contact with the facility throughout the course of treatment. Typically, the many aspects of healthcare such as the web site, the patient care policies, interpersonal communication, printed materials and publicity, and the design of the interior spaces are evaluated independently. The unique aspect of this research is the development of quantitative and qualitative assessment methodologies to examine all of these aspects of experience design holistically. An improved medical experience design benefits everyone who uses healthcare facilities.

2. RESEARCH PLAN

Outlining the problem

This research focuses on the experience design of health care. The typical model of healthcare in the United States is based on the Planetree Model, an approach to healthcare design developed in the late 1970s by Angelica Thieriot. Revolutionary in its time, the Planetree Model sought to create a more holistic environment to support patient care. The underlying philosophy of the Planetree Model was to address the physical, psychological, emotional, spiritual, and social dimensions of patients. This represented a radical departure from the healthcare culture of the time. (Kopek, 2006) However, this model needs to be re-interpreted to include

changes in technology and changes in our culture. This research looks at ways that experience design can be used to enhance the Planetree model. Experience design involves the design of all visual, verbal, and interpersonal communication involved in a health care situation. The experience involves the first contact or impression of a facility throughout the course of the actual treatment process. Experience design also considers how well the physical space of the facility serves to facilitate the physical as well as the social, emotional, and behavioral aspects of the activities taking place in that space. For instance, in some instances the space should provide a sense of privacy, in other instances, the space should accommodate social interactions. A similar flexibility and activity-centered appropriateness should be present in the web site. An experience design approach to evaluating medical facilities looks for the cohesiveness of the experience from the standpoint of the underlying mission of the facility as compared to the needs of the constituents. It evaluates the experience both holistically and temporally. By improving a patient's initial impression of a healthcare system and supporting that with equally positive experiences with all aspects of that system, such as the physical facilities, the web site, personal experiences with staff and the medical providers, the overall quality and effectiveness of the medical facility can be improved over a duration of time. By evaluating the experience holistically, the likelihood that one aspect of the experience will negatively impact the total experience is minimized.

Iowa State University

Iowa State University (ISU) has a population of over 26,000 students. It is located in Ames, Iowa, a small, rural city in the Midwest region of the United States. Iowa State University is organized into eight colleges; Agriculture and Life Sciences, Business, Design, Engineering, Graduate College, Human Sciences, Liberal Arts and Sciences, and Veterinary Medicine. Of this student population, approximately 23,000 students are undergraduates and approximately 4,500 are graduate students. According to data from 2006, the ethnic background of Iowa State University students is as follows:

Undergraduate Students	Graduate Students
2.7% African American	2.9% African American
0.3% American Indian/Alaskan Native	0.3% American Indian/Alaskan Native
3.5% Asian/Pacific Islander	2.0% Asian/Pacific Islander
2.5% Hispanic	1.5% Hispanic
87.9% White	61.2% White
3.1% International Students	32.1% International Students

Iowa State University Thielen Student Health Center Pilot Study

In collaboration with James Nelson, the director of the Thielen Student Health Center (TSHC), a pilot study was developed to refine a methodology for studying the user experience of healthcare facilities and determine how well they match the expectations of their constituents. The first phase of the study, conducted during the summer of 2007, is to develop and refine the research methodology via a pilot study to determine the quality of first impressions about TSHC and the subsequent experiences that students have when using the student health center. It used focus groups and surveys to target areas for qualitative and quantitative data collection. The ultimate goal is to use the focus group and survey data to create an evaluation methodology for healthcare experiences that targets the social, emotional, and behavioral needs of the Generation Y student population. The data-driven design of this type of user experience for a student health center should focus on creating a positive student expectation prior to actually using the student health center. That initial impression of the student health center should correlate with further positive medical service experiences in a way that fosters a sense of trust and open communication between the student and the student health center staff and medical providers. This research is designed to support the American College Health Association (ACHA) Standards of Practice for Health Promotion in Higher Education Standards 1 and 3. This research targets Standard 1, "Integration with the Learning Mission of Higher Education", by creating more appropriate health related programs and policies that promote student learning by making the material more relevant to a Generation Y audience. It also targets Standard 3, "Cultural Competence", number 3.2, by designing health promotion initiatives that reflect the social, cultural, political, and economic diversity of students. (American College Health Association, 2005)

3. PROJECT OBJECTIVES

The project has two basic objectives. First, a methodology based on activity theory and information architecture theory was developed for the pilot study with Thielen Student Health Center. The study looks at how to target a specific student populations and how to identify key areas for change to improve the communication between students and health care providers. It also examines what changes could improve the students ability to advocate and negotiate their own health care in a more appropriate way. The second objective of the research is to test the methodology developed in the student health center pilot study in a second medical facility with a different set of constituents. The second study is planned for Summer 2008. The results of these two studies will then be analyzed with regard to the most effective research strategies. The

ultimate goal of these studies will be to refine the methodology to the point that it can be used as a reliable assessment tool for future studies in a variety of health care facilities and situations.

Understanding Health Care Needs and Perspectives

As human beings, our mental and physical states are intertwined. Through a combination of reason and emotion we constantly reflect on our state of being: How do I feel about what just happened? Will I do that again? Does that seem like a good choice? In all that we do, whether physical or emotional, we ultimately seek pleasure and avoid pain. However, Antonio Damasio, in his book, Descartes' Error: Emotion, Reason, and the Human Brain, notes the current paradoxical nature of medicine and its practitioners in our culture. While many physicians show a surprising level of interest in humanities, the practice of Western medicine, especially in the United States, says Damasio, targets the diagnosis and treatment of physical ailments largely to the exclusion of the social and emotional condition of the patient. "Medicine," he says, "has been slow to realize that how people feel about their medical condition is a major factor in the outcome of treatment." (Damasio, 1994)

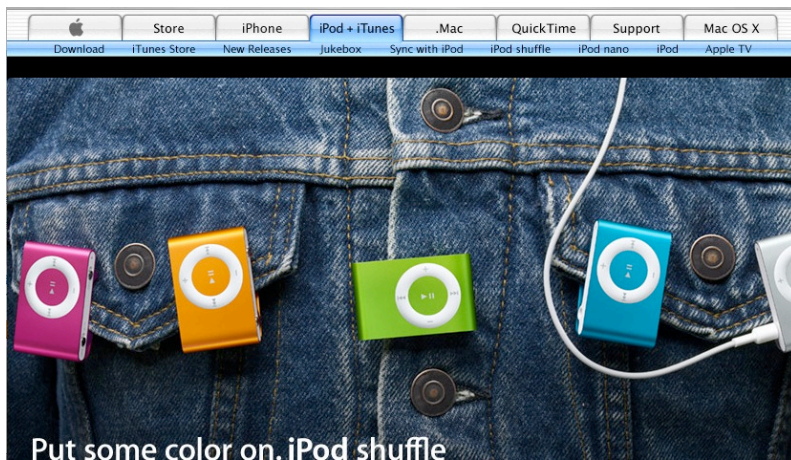


Figure 1: iPod® website that targets a Gen. Y audience.

Nintendo® or iPod® (Fig. 1) have been designed to perfectly fit not only the physical needs of these generation Y consumers, but also their emotional needs and their lifestyles. They become part of the natural experience of their consumers. And this emphasis on the user experience is not just limited to consumer products. Businesses such as Starbucks® promise this young audience more than just a cup of coffee. They too focus on filling an emotional need. Starbucks' commitment to customer experience is clearly identified in the following five guiding principles from their mission statement:

Provide a great work environment and treat each other with respect and dignity.

Embrace diversity as an essential component in the way we do business.

Apply the highest standards of excellence to the purchasing, roasting and fresh delivery of our coffee.

Develop enthusiastically satisfied customers all of the time.

Understanding Student Health Care

This is especially true with regard to today's Generation Y college students. Businesses have long known that generation Y is different than previous generations with regard to their priorities and worldview. Products such as

Contribute positively to our communities and our environment. (Starbucks Coffee Online, 2007)

With only minor modifications, these principles could also apply to the experience of a student health center. And it could be effectively argued that a quality healthcare experience is of much greater importance than a cup of coffee.

Consumer products and services employ what is known as experience design to tailor their products to the needs of their consumers. But experience design is not typically applied to health care. Because of this, health care environments rarely send a visual message of comfort or solace to a patient who is entering the space. And the welcoming message of the staff in health care facilities is often overshadowed by daunting forms to fill out, excessive waiting periods, uncomfortable levels of privacy, and a sense of anxiety caused by a combination of other physical, sensory, and interpersonal factors. But could the experience in a health care facility be as comfortable as a favorite coffee shop? Could the inter-personal exchanges, information on the web or in print, and sensory experiences in the healthcare facility give patients a feeling of acceptance and empowerment? Could the healthcare facility provide the kind of experience that will foster trust and help people to manage their anxieties about healthcare?

According to Digital Web Magazine, this type of design, often referred to as branding or experience design, can be understood as the intellectual and emotional associations that people make with a company, product or person. It is internal to each person and is based on unique, subjective interpretations. However, the more closely aligned a company or product is with the needs and desires of customers, the more likely that company is to maintain a strong positive mental image in their customer's minds. Experience, on the other hand, is anything that our senses perceive in terms of our interactions with the world. The brand and experience of a company or service is the culmination of how people think about that service and why people respond to the experiences that it provides. (Digital Web Magazine Online, 2007)

While tailoring a health care experience to the specific needs of the patients might benefit them, can it really add value to the experience of the medical staff? The answer quite possibly is yes. According to Damasio, "all great physicians have been those men and women who are not only well versed in the hard-core physiopathology of their time, but are equally at ease, mostly through their own insight and accumulated wisdom, with the human heart in conflict. They have been expert diagnosticians and miracle workers, because of a *combination* of knowledge and talent." (Damasio, 1994) The benefit of this research to the medical staff is giving them a better picture of the patients they serve. The type of picture that can translate into better interpersonal interactions and a higher level of trust and respect from those patients.

Specific Objectives for Phase One : The TSHC Pilot Study

The objectives of this phase of the research is to address the following research questions:

- What type of student health experience would be most effective with Generation Y college students?
- How could a student health center meet the social, behavioral, and emotional needs of these college students?
- How could an experience design in a student health center serve to empower a student in terms of that student's educational, motivational, and behavioral well-being?
- Can improved expectations, communication, and public relations between students and medical providers improve student health care?

Student Benefits

In most cases, college freshman are experiencing for the first time what it means to be responsible for their own healthcare. By creating a strong, positive first experience, students will develop habits that will influence their relationship with healthcare and medical providers for the rest of their adult lives. This research will seek to determine better ways to utilize technology and meet the lifestyle needs of Generation Y. By improving these early healthcare experiences, Student health centers can be leaders in teaching students to be better healthcare consumers, better patients, and better decision-makers with regard to their lifestyle choices.

Specific Objectives for Phase Two

The objectives of this research will be to address the following research questions:

- How effective is the methodology from phase one in evaluating a different health care facility?
- What changes need to be made to the methodology and its implementation to make it flexible and transferable to other medical facilities with other constituents?

4. RESEARCH DESIGN

Research tools are designed to assess students' knowledge of available health services and their appropriate utilization. Because of the emphasis on understanding the users in terms of their social, emotional and behavioral responses to health care, ethnographic data and student surveys are used to determine how closely students' perceptions of the student health center match the reality of the facility in terms of what it offers and how students can gain access to those services.

In their book, Activity-Centered Design: An Ecological Approach to Designing Smart Tools and Usable Systems, Geri Gay and Helene Hembrooke describe the role of activity theory and its relationship to ethnography, anthropology and sociology. Activity theory, they say, acknowledges the multiple dimensions of human engagement. It also emphasizes the mediating role and transformative power of cultural artifacts. (Gay and Hembrooke, 2004) Activity theory is an object oriented research theory. It works well as a model of

understanding and evaluating experience design for student healthcare centers because it gives object status to physical, as well as non-material phenomena. It stresses the purpose, intent, or motivation of acting on these objects and allows them to be evaluated based on these principles. Yrjo Engeström's model of activity theory is based on the idea that activities are based on the interactions of people, artifacts, an object or a motive, sociocultural rules, and roles. (Gay and Hembrooke, 2004) For this study, Engeström's model was applied to the experience of healthcare. However, in addition, three main parts were identified that break healthcare into its constituent parts. In Engeström's model, the bottom level is comprised of rules, community and division of labor. That level of activity was equated with the role of a student healthcare facility as that of a workplace. All of the doctors, nurses, and support staff operate primarily in this level. They are involved at other levels, as are patients, however, this part of the activity structure is primarily based on the idea of a workplace. The second level was identified with the human experience. It is at this level that the patients interact with their environment, artifacts, and social and emotional experiences. At this second level, the patients react to the affordances of the physical and social space. This level is no longer a workplace but more of a living environment. The top level is the healthcare experience space. It is the culmination of the social structures, the physical spaces, the artifacts, and the interactions between the human experience space and the workplace. (Fig. 2)

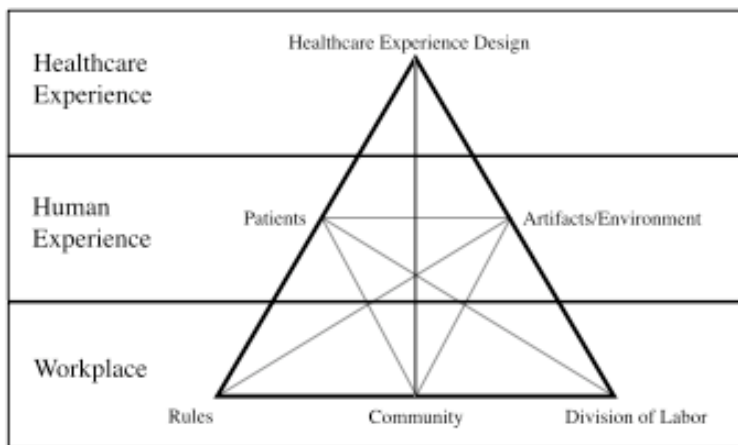


Figure 2. An adaptation of Yrjo Engeström's model of Activity Theory applied to the healthcare experience.

Based on the data on student expectations of the student health center and its medical staff, recommendations will be made with regard to how the student health center might better serve the students. It will also be used to determine how medical staff might be better able to establish trust on or before a student's first visit to the health center. It will also determine how medical staff can better aid students in the management of health-related fears or anxieties. The data will be used to determine if the physical environment of the health center space is helping students to feel comfortable and instilling a sense of confidence. It will also examine how students respond to the verbal and non-verbal communication of the medical staff with regard to their

perceived confidence and comfort level. The student survey developed through a collaboration of undergraduate students, graduate students, and faculty includes the following quantitative questions on a Likert Scale from 5, strongly Agree, to 1, strongly disagree: (Fig. 3)

	Strongly Agree	Agree	Uncertain	Disagree	Strongly disagree
Staff was courteous:	5	4	3	2	1
Staff was attentive to my needs:	5	4	3	2	1
It was easy to check in:	5	4	3	2	1
The waiting time to see a doctor was reasonable:	5	4	3	2	1
The facilities were neat and clean:	5	4	3	2	1
The treatment and my instructions were explained clearly:	5	4	3	2	1
I received an adequate explanation of my illness, test results, or other procedures performed from the doctor:	5	4	3	2	1
My right to privacy and confidentiality were respected by the staff:	5	4	3	2	1
I was satisfied with the overall service provided during my visit:	5	4	3	2	1
I will continue to use the Health Center:	5	4	3	2	1
I feel I am well informed of the services provided by the Health Services	5	4	3	2	1
I was given an adequate amount of time to discuss my medical situation with the doctor:	5	4	3	2	1
The doctor took time to listen to me:	5	4	3	2	1
The doctor took my medical situation seriously and trusted my judgment:	5	4	3	2	1

Figure 3. Quantitative survey questions used for the TSHC pilot study.

Students were also asked to respond to the following qualitative survey questions:

- Did any thing about the facilities or staff at Thielen Student Health Center or your health provider make you feel valued or well-cared for? Please specify:
- Did any thing about the Thielen Student Health Center or the health provider that you use make you feel uncomfortable or dissatisfied? Please Specify:
- Do you have any other specific experiences with the facilities, medical providers or staff at Thielen Student Health Center or your health provider that you would like to share?

5. DATA AND RESEARCH FINDINGS

The Thielen Student Health Center Pilot Study was conducted through an online survey and a paper survey between June and August of 2007. A total of 102 students from a variety of disciplines responded to the survey. The ethnic backgrounds of the respondents can be seen in Fig. 4. Fifty-nine percent of the total respondents were Caucasian and 29% were Asian. In addition, 70% of the respondents were female and 30% were male students. In Figure 4, an occasional user is defined as one who used the Thielen Student Health Center from 1 to 3 times in the last 12 month period. A frequent user was defined as someone who used TSHC more than 4 times during the same period.

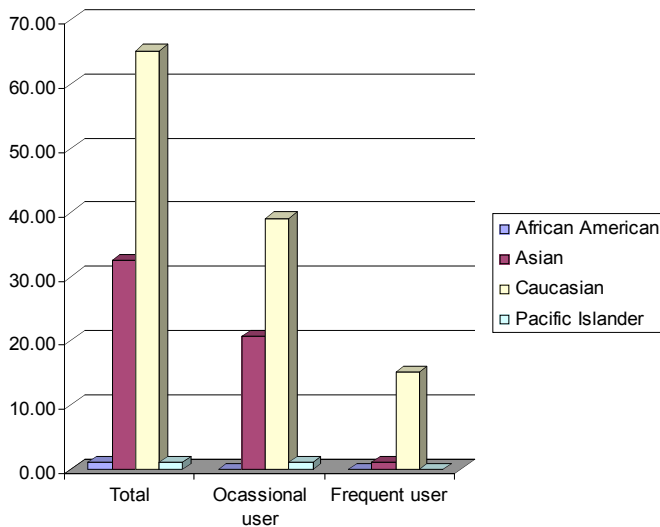


Figure 4. Respondents by Ethnicity and Frequency to the Thielen Student Health Center Pilot Study.

The age of respondents was as follows: 5 respondents who were 17 - 19 years old; 53 respondents who were 20 -23 years old; 21 respondents who were 24 – 28 years old; and 15 respondents who were 29 years old & above. Demographic data was also collected with regard to the respondent's year in college. (Fig. 5) The students ranged from sophomore through graduate student status. The most frequent users in both categories were found to be seniors.

When asked why student chose to use the Thielen Student Health Center, 58% of students indicated location or convenience as their main reason for choosing this facility rather than a previous health facility. Thirty-seven percent of respondents indicated health insurance or lower cost as their prime reason for choosing TSHC. For

some student such as graduate assistants or international students, health insurance may be tied to the Thielen Student Health Center, thus limiting their ability to choose another facility.

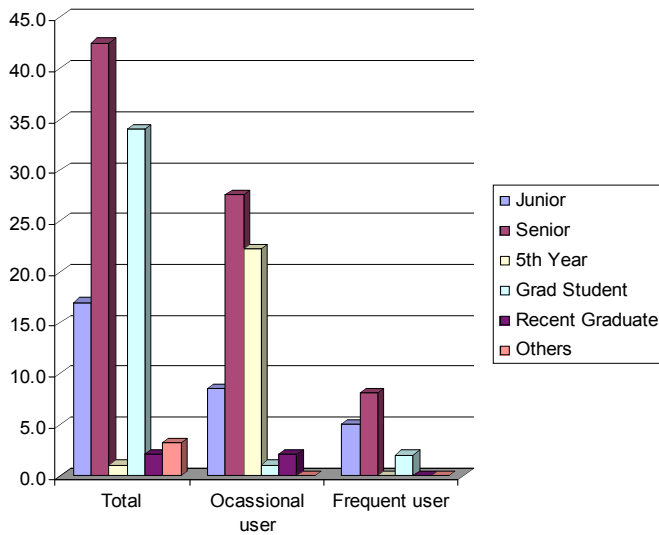


Figure 5. Respondents by year in college for to the Thielen Student Health Center Pilot Study.

The breakdown of respondents to this pilot study is shown in Figure 6. The survey respondents disproportionately represent students from the College of Design due to the time and budget limitations. A more diverse and representational audience continues to be sought through on-going data collection.

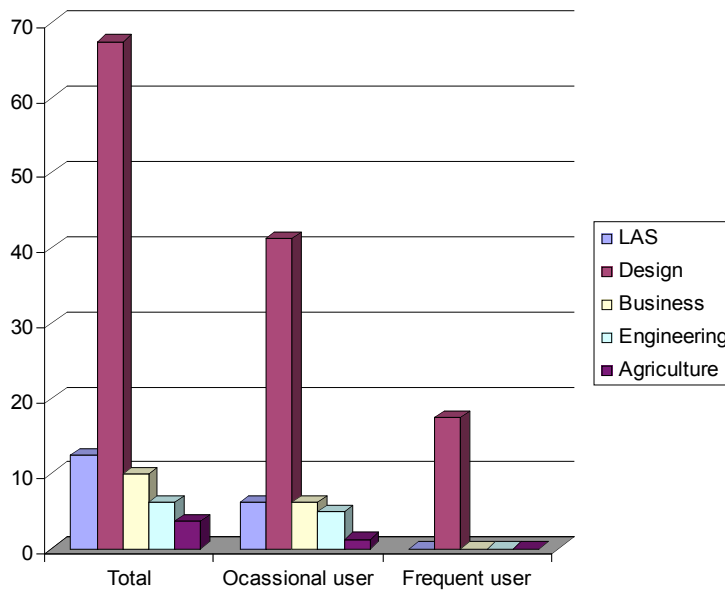


Figure 6. Respondents by college to the Thielen Student Health Center Pilot Study.

The assessment statements from the survey were categorized according to the following categories: cleanliness, good information, convenience, friendliness, and respectfulness. The following are measures for each of these categories:

Friendliness: Staff was courteous.

Respectfulness: Staff was attentive to my needs.

My right to privacy and confidentiality were respected by the staff.

I was given an adequate amount of time to discuss my medical situation with the doctor.

The doctor took time to listen to me.

The doctor took my medical situation seriously and trusted my judgment.

Convenience: It was easy to check in.

The waiting time to see a doctor was reasonable.

Good Info: The treatment and my instructions were explained clearly.

I received an adequate explanation of my illness, test results, or other procedures performed from the doctor.

Cleanliness: The facilities were neat and clean.

Based on these five quality scales, cleanliness received the highest user rating. (Fig. 7) This was followed by good information and convenience. Measures of friendliness and respect were rated as uncertain. Respondents were mixed with regard to their perceptions of privacy, confidentiality and the physician's attentiveness to their social and emotional needs. The measure of friendliness and respectfulness indicate the importance place on social and emotional needs in health care by the respondents.

Supporting data for this position can be found in the qualitative data collected from this survey. Some examples of this from the student responses include the following:

"the phone registration service was not courteous."

"I did not feel like my doctor took the time to consider my case individually. He just did the by-the-book treatment."

"The receptionist staff are consistently irritated, in bad moods, grumpy, and very difficult to

communicate with, no matter what time you call them.”

“I felt like I was just treated like another college student and was labeled as a ‘partier’ and wasn’t taken seriously”

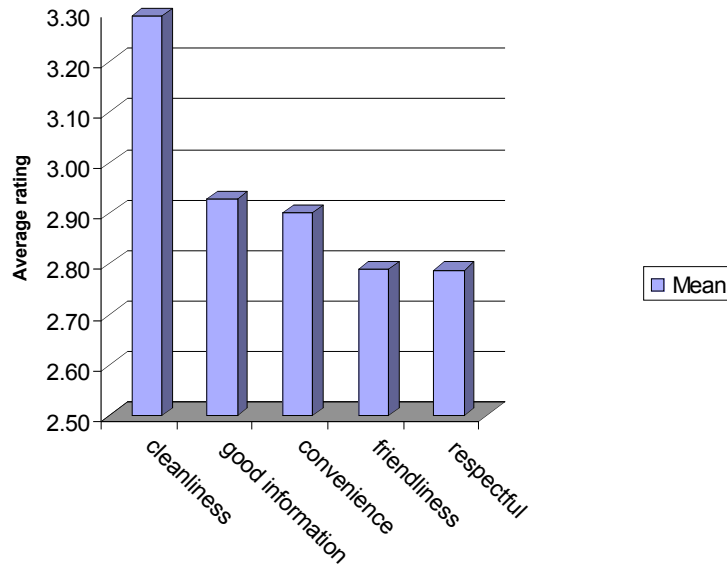


Figure 7. Five assessment scales.

6. CONCLUSIONS AND IMPLICATIONS

Measures of friendliness and respectfulness were indicated as areas in need of improvement. Students found perceived irritability and disrespectfulness on the part of staff and physicians attending to their needs to be the most unsatisfactory. In addition, students indicated that they have a higher need for improved communication and convenience from the Thielen Student Health Center. Specifically, they often mentioned frustrations with setting appointment and prolonged waiting times for treatment.

When asked how satisfied they were with the quality of TSHC, students indicated an average assessment score of 3.15 based on a 1- 5 scale, 1 indicating unsatisfied and 5 indicating very satisfied. With regard to availability, based on the same 1 – 5 scale, students gave an average rating of 3.44. Both of these scores indicate an uncertain attitude about the quality and availability of services provided by the Thielen Student Health Center.

Implications and recommendations for improvement in the TSHC experience design included improved measures of perceived friendliness and respectfulness. These might be achieved through improved information, better dissemination of information, and an improved social and emotional environment. This would need to be designed as a complete experience through the physical environment of the facility, the social experience between the student and the staff at TSHC, and the branded experience as manifested through print graphics, web information and related advertising. An increased level of sensitivity to student emotions and behaviors should be a focus.

Limitations of this study included the under-representativeness of the sample and the size of the sample. Additional data analysis is currently underway to look at the affects of other variables and the services provided by Thielen Student Health Center. Data collection is still underway. This research is conducted as a pilot study to develop a methodology for combining quantitative and qualitative information into a reproducible methodology for the study and assessment of health care services and facilities.

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REFERENCES:

American College Health Association. ACHA Guidelines: Standards of Practice for Health Promotion in Higher Education. Second Edition, Revised Jan. 2005. Online at http://www.acha.org/about_acha/ctfs/com_hpshe.cfm

Damasio, Antonio R. (1994). Descartes Error: Emotion, Reason, and the Human Brain. New York: Quill.

Digital Web Magazine. Brand Experience and the Web : Understanding Brand Experience. Online at http://www.digital-web.com/articles/brand_experience_and_the_web/

Gay, Geri and Hembrooke, Helene. (2004). Activity-Centered Design: An Ecological Approach to Designing Smart Tools and Usable Systems. Cambridge: The MIT Press.

Kopec, Dak. (2006). Environmental Psychology for Design. New York: Fairchild.

Starbucks Coffee. Online at <http://www.starbucks.com/aboutus/environment.asp>