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**SCHOOL WEB SITES WITHIN THE EDUCATIONAL MARKETPLACE:
A CASE STUDY INVESTIGATING THE PARENTS AS ENGAGED
CONSUMER-USERS**

by

Claudia Jane Beeman

A Dissertation Submitted to the Faculty of
San Diego State University and the University of San Diego
in Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

Dissertation Committee:

Marcie Bober, Ph.D., San Diego State University
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May 2008

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by

Claudia Jane Beeman

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DEDICATION

I am dedicating this dissertation to my mom. It was her dreams that set this whole process in motion. Thanks Mom for believing I could accomplish something beyond your wildest dreams. I “owe” you.

ABSTRACT OF THE DISSERTATION

School Web sites within the Educational Marketplace: A Case
Study Investigating Parents as Engaged Consumer-Users

by

Claudia Jane Beeman

Doctor of Education

San Diego State University-University of San Diego, 2008

Schools -- like their corporate counterparts -- recognize the many advantages that the Internet affords. Today's schools vie for students, and thus use the web to market their services and showcase their management team (administrators, teachers, staff) and academic accomplishments. In a sense, then, web sites are the public face of education; those that are well-designed and multi-featured can enhance a district's public image and create the perception of excellence and competence. This case study explores how one suburban, K-8 school district approaches web site development, specifically, the process by which decisions about design, development, and maintenance are made (and by whom); the ways in which they engage those who explore them--with a particular focus on parents; and, how well the sites adhere to generally recognized design attributes. Data were gathered through interviews with school administrators, document review, web site analysis, parent surveys, and parent focus groups. Results offer information to policymakers, administrators, and site designers regarding principles of web design unique to parents as educational consumers. Principles emerging from the case study can lead to additional research not only in the field of education, but, also, in the fields of web design and marketing.

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CHAPTER 1

INTRODUCTION

BACKGROUND

The Internet is a part of everyday life in the United States and across the globe. It is as common as watching television, talking on the phone, or listening to the radio. Internet World Stats (2006), a market research web site maintained by Minniwatts Marketing Group, estimates the number of Internet users worldwide to be over one billion. The same marketing site lists a 182% growth in global Internet usage between 2000 and 2005. Authors of the Pew Internet and American Life Project (2005) confirmed the same widespread usage across the U.S., suggesting that 84% of American adults 18 years and older regularly access the Internet. The use of Internet has become so widespread it is now a public expectation for all organizations to maintain a web presence.

Churches, government agencies, and private organizations have joined commercial enterprises in recognizing the advantages afforded by Internet technologies—including access to public services (Hinnant and O’Looney, 2003). They have recognized the Internet as a technological innovation that streamlines the delivery of information and facilitates the public’s ability to participate. According to the Department of Commerce (2004), high speed connectivity promises to enhance our nation’s productivity and economic competitiveness, improve education, and expand health care for all Americans. Abuhamdieh, Kendall, and Kendall (2002) argue that the web is a channel through which an organization can directly connect to the public it “serves” and to disseminate information economically and efficiently; it is also a powerful two-way communication tool that allows for feedback from the users. The web can help an organization achieve its mission, either to increase revenues, raise public support, or inform an outside audience.

School administrators and policymakers have recognized the many advantages afforded by a web presence and, as a result, have posted both district and school sites on the web. Schneider and Buckley (2000) maintain that schools are increasingly using the Internet

to help run their organizations and deliver educational services. Many schools have established web sites as a convenient and efficient way to publicly display and update accountability data—better known as the School Accountability Report Card, or SARC (California Department of Education, 2006). Mandated by State Proposition 98 (California Department of Education, 1988), California schools must annually inform the public about school demographics, testing outcomes, and qualifications of the teaching staff. Motivated by this legislation, administrators and teachers have designed web sites that include SARC data and much more—including student work, curriculum, homework, home-school contacts, events calendar, lunch menus, and health alerts.

SCHOOL WEB SITES AND THE PUBLIC IMAGE

School web sites are on display in an anywhere/anytime format and have become a part of the public face of education. Painter (2001) feels that marketing has become a function of today's educational climate. He maintains that curb appeal, an idea once reserved for the housing market, is now a concern to school administrators. Parents are no longer required to place their children in the neighborhood school just down the street; they now have options such as charter schools, home schooling, private schools, and both intra- and inter-district transfers (U.S. Department of Education, 2007). Parents considering the various school choices often turn to the web to help them decide. Many schools are using attractive and efficient web sites to showcase educational assets to parents.

The marketing of a school, through a web site, goes beyond parents and students; it extends out into the community, as well. Cifuentes, Green, and McNamara (2004) view schools not only as educational institutions, but also as cultural, political, and economic organizations. The web can be a school's front door to the community and also to the world (Carr, 2001). A quality web site can convey the image of a technology-minded organization, can be used to showcase innovative programs, or can be used as a gateway for community interaction (Geest, 2001). A high quality web site can become a powerful marketing tool reflecting a positive public image for education.

In viewing schools within the context of the educational marketplace, one can borrow from the research done in the business field where customer satisfaction in the design of web

sites is an important factor. Marketing studies have focused on satisfying the needs of the consumer for decades and more recently have expanded the research to include a satisfied customer within an electronic environment. Wang, Tang, and Tang (2001) define customer satisfaction as “an affective response of varying intensity that follows consumption, and is stimulated by focal aspects of sales activities, information systems (web sites), digital products/services, customer support, after-sales service, and company culture” (p.91). According to Benun (2003) a user dissatisfied with a site (whether the issues are technical or conceptual) will avoid it and go elsewhere. In addition, Dalglish (2000) finds that consumers want web sites driven by their needs and desired outcomes. Spool, Scanlon, Schroeder, Snyder, and DeAngelo (1999) say that web site usability is directly linked to the user’s ability to accomplish a goal. All in all, these studies affirm an important ingredient of evaluating quality web design includes knowing how well the design meets the needs of the targeted audience.

AUDIENCE-CENTERED EVALUATION

Web sites designed to meet the needs of a target audience call for feedback from the end-users in the evaluation process. Bunz (2002) suggests that web site evaluation should be audience-centered. Her approach asserts that in order to assess the usability of a web site one must consider the end-user’s technical fluency, individual needs, perception, and construction of meaning. Small and Arnone (2000), on the other hand, take a more “design-fit” approach, viewing usability as how well the site accomplishes its purpose, meets the needs of the audience, offers quality content, etc. In other words, an effective tool for measuring the quality of a web site explores the design’s ability to engage the target audience.

The identification of school web site attributes that engage the parent audience is a key element of this study. Parents have a vested interest in the schools their children attend and can profit from the information offered through school web sites. For example, outside educational resources accessed through embedded hyperlinks can assist parents with their child’s education. Information on school web sites can help parents monitor their child’s progress, describe grade level curriculum, and provide a calendar of events. School web sites

that engage parents can be used to promote the assets of a school. Researchers have long established that greater parent involvement is closely linked to better student performance (Jeynes, 2007; Lee & Bowen, 2006). They have also documented that children who do well in the early years will continue to do well throughout their academic careers (Jimerson, Egeland, & Teo, 1999). A school web site designed to engage parents at the elementary level helps to set the tone for future parent involvement, which in turn benefits a child's education for years to come.

A WEB SITE'S SOCIAL CONNECTION

Several studies have shown evidence regarding the ongoing social interaction between the web site and the end-user. Crowston and Williams (1996) see the web as a social phenomenon and focused their studies on a variety of communicative practices, e.g., hotlists, homepages, and indexes. DePaula (2003) speaks more specifically of the human interactions that technology affords. Benun (2003) holds that good usability design promotes multiple open channels of communication between the organization and the consumer leading to an establishment of trust and credibility. This interaction between the organization and the end-user is mediated through the quality attributes of the site.

The social interaction between an end-user and a web site's design attributes points to research grounded in a social constructivist theoretical framework, namely, that the acquisition of knowledge does not exist in its own right, but is the construction of knowledge by human beings as they interact and engage in the interpretation of their environment (O'Leary, 2004). The user's interpretation of web site quality is dependent on the contextual environment: the time, the surroundings, the individual's past experiences, and the site's attributes. One can argue that web sites rated highly by design experts may not be engaging to an end-user. It can be said, school sites, designed with attributes found to be engaging for a specific target audience, will, in turn, reflect a positive image in today's educational marketplace.

THE PROBLEM STATEMENT AND PURPOSE OF THE STUDY

Schools have established web sites as an efficient way to openly communicate with the public in an anywhere/anytime format. Since schools are within the educational marketplace, then school web sites are part of the public face of education. Dull or dreary sites may communicate a public message that does more harm than good; it may mislead, misrepresent, or reflect a lax program. On the other hand, a school site, found to be engaging, sends out a positive message about the school. Parents are end-users with a vested interest in the schools their children attend; they have specific interests and expectations when visiting their child's school site. Sites designed to be engaging to parents are viewed as an asset for a school. Schools lack research-based evidence to guide the development of engaging web sites for the parent audience. More research is needed involving the development of school web sites and the design attributes that engage a parent audience.

Ultimately, then, this study had a three-fold purpose: to document the development of school sites; identify the engaging design attributes of school web sites; and investigate how or in what ways different attributes engage parents as end-users. A case study was deemed the most appropriate methodology for this research as it limited the scope to a specific phenomenon and placed the investigation into a real-life context (Yin, 1994). First, the researcher explored the purposes underlying development of school web sites within a K-8 suburban district; in doing so, she uncovered an array of constraints and enablers that the district faces. Next, she interviewed parents to explore their needs as a targeted audience and to determine their perceptions of engaging school web site design. Finally, she used a tested tool to personally assess the sites, exploring in a structured way how different attributes contribute to parent engagement.

RESEARCH QUESTIONS

The study was driven by three key questions--grounded in a theoretical framework in which engagement is defined as a sensation experienced when the end-user positively interacts with the web site. Five key concepts undergird that sensation: *enjoyment*, *intrinsic motivation*, *perceived sense of control*, *goal-directed activity*, and *focused attention* (O'Brien and Toms, 2005).

Research Question One

What are the purposes, as well as, the constraints and enablers that underlie the building and maintenance of a district school web site?

It is important to first identify the influential factors that surround the development of a web site before investigating parent engagement. According to Fulk, Schmitz, and Steinfield (1990), media use occurs within a network of social relationships. They assert that an end-user's perceptions and attitudes towards media can be influenced by social norms established by the group or by cultural definitions of accepted rational behavior. The actions of school and district administration and state policymakers impact the design process of school sites. The researcher interviewed district administrators, support personnel, and teachers to investigate the issues that factor into or influence site design, development, and maintenance, e.g., policies, budget allocations, technical equipment, staff development, advertising, support staff, security measures, and more. She supplemented those interviews by closely reviewing two key documents that reveal the district's tactical and strategic plans.

Research Question Two

In what ways and how well do the district's school web sites engage the parents as a specific target audience?

As earlier noted, testing and evaluation are key to assuring that a site does indeed target audience(s). In order to better understand their varied interests, the researcher surveyed parents from four of the nine schools in the district—with the schools themselves selected through stratified random sampling. The participants responded to questions regarding their Internet usage, type of Internet access, and their information interests in 12 distinct areas. Following an initial analysis of the data, she conducted three small groups of interested parents who elaborated on their responses. A semi-structured interview protocol allowed her to focus on features and attributes that may be organized around the concepts earlier described: *sense of control* over the site (index, search engine, links); *intrinsically motivating* (student work, student data, calendars, email contacts); *enjoyable* (images, currency, relevancy); features that *focused attention* (homepage, video clips, educational resources); and *accomplishing goals* (FAQs, help, technical support).

Research Question Three

To what extent does the design of the district's school web sites contain attributes that attend to the engagement of the end-user?

An individual's engagement in a web site is influenced by its "quality" attributes. O'Brien and Toms (2005), posit that one element of engagement is in the system's ability to garner the users' attention, either by the user's first impression or the site's aesthetic appeal. Quality design attributes encourage an end-user to explore a site. Jacques, Pierce, and Carey (1995) warn designers that if users are uncomfortable with a system they will not be sufficiently engaged to continue using it. The researcher used engagement theory to construct a rubric that measured engaging web design attributes. The rubric is organized around 20 attributes (for example: scope, depth, currency, contact information, and accuracy) that fall into five distinct categories; for each, the evaluator must provide a rating (along a five-point ordinal scale) and comments to support it. The rubric guided her examination of each of the district's nine school web sites.

SIGNIFICANCE OF THE STUDY

This case study contributes to the body of research in a variety of ways. First of all, it is one of the few that combines education with the consumer marketplace in the investigation of web design. The methodology borrows from the interests and strengths of one field and applies it to the other. In addition, the study provides insights into the development of school sites and the types of constraints and enablers that are associated with or factor into web site design within the school setting. Results reveal principles that can then be tested through additional research. Finally, the study adds a not-for-profit dimension to audience-centered web site evaluation found more commonly in the business arenas of marketing and web design.

DEFINITION OF TERMS

Artifact: any object made by human beings, especially, with a view to subsequent use

Consumer satisfaction: affective response of varying intensity that follows consumption, and is stimulated by focal aspects of sales activities, information systems (web sites), digital products/services, customer support, after-sales service, and company culture

Distributed cognition: proposes that human knowledge and cognition are not confined to the individual; instead, it is distributed by placing memories, facts or knowledge on the objects, individuals, and tools in our environment

End-user: a person who uses a product

Engagement: a sensation that is experienced when the end-user interacts with the web site and can be described as enjoyment, intrinsic motivation, a perceived sense of control, a goal-directed activity, or focused attention

Flow: the holistic sensation that people feel when they act in total involvement with a goal-directed activity

Navigability: the extent to which a site is perceived to have unrestrained connectedness, by including links to other parts of the site and to other sites for the purpose of ease in information retrieval.

CHAPTER 2

REVIEW OF THE LITERATURE

INTRODUCTION

This chapter is a review of the literature informed by several disciplines including social psychology, web design, audience-centered evaluation, and marketing. Topically, the chapter unfolds as follows:

- A synthesis of the literature related to the genre of web sites and a description of their unique characteristics.
- An outline of the theoretical framework for the study grounded in social constructivism, extending into the theory of distributed cognition, tied to the theory of flow, and associated with the theory of engagement.
- A description of research which points to considering the audience in the evaluation of web site design.
- The highlights of studies associated with web sites as useful marketing tools for schools.
- An exploration of the research regarding the types of design attributes found in quality web sites from an expert's point of view.

Ultimately, this chapter provides the background information supporting an investigation of school web sites from a consumer/user perspective within the educational marketplace.

WEB SITES: A GENRE WITH UNIQUE CHARACTERISTICS

In the modern era of technology, a web site is becoming as common a marketing tool as the organizational letterhead, memo, fax, or business brochure. But clearly web sites aren't all the same; they are differentiated by audience and intent. In many ways, then, a web site is a type of literary form, or a genre. Yates and Orlikowski (1992) refer to genres as typical communicative actions, characterized by similar content, aligned in a familiar format, and accessed in response to recurrent situations. In other words, a genre is a category that can be associated to a particular style, form, or technique of expression. A newspaper is a well-known genre recognized by physical features such as newsprint, printing ink, and supplements as well as linguistic features such as the editorial, headlines, and journalistic

writing style (Ihlström, 2004). A web site is a genre with its own unique features including a homepage, interactive hyperlinks, digital images, a search index, helps, email contacts, and more. From Amsterdam, van der Geest (2001) establishes that a web site is a central point from which large amounts of information can be distributed and accessed. The information on the site is fluid and can be updated repeatedly and instantly with little effort and at low costs. A web site is interactive and has the ability to provide one-way, as well as, two-way communication.

The medium for an Internet user is not in the form of a book, ad, brochure or flier, but a web site. Allen, Otto, and Hoffman (2004) see a medium as more than a substance through which something is carried or transmitted; they expand the meaning of a web site as an environment that supports both the perception of opportunities for acting and some means for action. Specifically, a web site is a type of media that gives the user the opportunity, as well as, the means to perform a task. To Norman (1993), a web site would be considered a cognitive artifact, purposefully used to compensate for an individual's limited memory. Different from the pages contained within the cover of a book, a web site is a medium that extends beyond itself creating an environment that is interactive, fluid, and highly social. Another characteristic of web sites is that they can be easily adapted to meet the needs of specialized populations. Carr (2001) makes the point that a web site can be personalized or tailor-made for specific audiences. For example, designers incorporate password protection into sites where cyber theft of personal information is a possibility. Cifuentes, Green, and McNamara (2004) suggest that language options give multi-lingual choices to a broader user audience. Nielsen (2000) refers to site adaptations which support accessibility to people with disabilities through assistive technologies, i.e., web readers for the blind or pointing sticks for the physically handicapped. The adjustments can be made to fit most any targeted audience with relative ease.

Also web sites can be viewed as an open window to the community. The open window can offer several advantages to an organization. According to Abuhamdieh, Kendall, and Kendall, (2002) web sites improve strategic positioning and help the public image. They create a virtual community bringing the organization closer to the public allowing more direct contact than would be possible otherwise. Palmer and Griffith (1998) see the

opportunity for a competitive advantage with a quality web presence. Zhang and von Dram (2002) maintain it can often play a central role in giving a good first impression when users have a positive virtual experience. The quality of the design has a crucial affect on an individual's perception and attitude towards the organization.

Web sites are perceived by individuals from within a social context. DePaula (2003) recognizes the socialization of computer networks. She points out that a person's interactions with network technologies are complemented by his/her interactions with others and then mediated via the Internet. In addition, Fulk, Schmitz, and Steinfield (1990) note that media use occurs within a network of social relationships. They assert that an end-user's perceptions and attitudes towards media can be influenced socially in a variety of ways. The influence can be experienced in the form of a direct statement from others; through vicarious learning in being with others; by social norms established by the group; or by cultural definitions of accepted rational behavior. Hinnant and O'Looney (2003) make clear that online technologies are not likely to be adopted if there is not sufficient demand from the end-users themselves.

A WEB SITE STUDY GROUNDED IN A MULTI-LAYERED THEORETICAL FRAMEWORK

Understandably a study of web sites involves a complex interaction between the network technologies, the computer, the web site, and the individual. In order to encompass all these various aspects, the theoretical framework for this study builds on four closely related theories. One can visualize the study's framework as a giant oak: rooted in the theory of social constructivism; extending into the theory of distributed cognition; branching off into the theory of *flow*; and ending with a fork in the branch to represent the theory of engagement.

The complex social influence involved with a study of web sites calls for a theoretical framework grounded in social constructivism. The theory contends that knowledge and reality are actively created by social relationships and interactions. Learning is not the transmission of knowledge; it is an internal process of interpretation. Learners do not transfer knowledge from the external world into their memories; rather, they create interpretations of their past experiences and the interactions in the world ("Social constructivism", 2006).

Developmental psychologist, Lev Vygotsky (1978), determined that people must create their own version of reality and then discuss this version with others. Once the reality has been socially tested and proven to be acceptable, the individual can move on to a higher order of learning.

In order to understand human behavior within a computer-mediated environment the theoretical framework must include the individual's interaction with objects, as well as, with others. Distributed cognition is the branch of cognitive science that views human knowledge and thinking beyond the mind of the individual. The cognitive process is seen as reaching out into the environment where the individual places memories, facts, and knowledge on objects, tools, or even other individuals in the environment. The representations can be available either in the mental space of the participant (memories, perceptions, opinions, experiences) or within the environment (symbols, artifacts, cultural input, social feedback). The individual's cognitive process involves the systematic interchange of information from pre-existing representations resulting in new mental models ("Distributed cognition," 2006). Norman (1993) refers to cognitive artifacts as objects within the environment used to expand a human's abilities beyond his biological heritage. A web site is considered a cognitive artifact in that a user manipulates the site to obtain information, to communicate with others, to be entertained, or to explore.

An individual's experience in a computer-mediated environment can often result in a state of *flow*. Csikszentmihalyi (1990) describes *flow* as the holistic sensation that people feel when they act in total involvement. Individuals experience flow in doing a goal-oriented activity: playing music, climbing a cliff, playing chess, reading a book, or using a computer. A person becomes so involved in the experience that nothing else seems to matter. It is often referred to as being *in the zone*. Several elements of flow theory include: enjoyment, intrinsic motivation, focused attention, and goal-directed activities that provide feedback and perceived control (O'Brien and Toms, 2005). Another important element of flow theory is the appropriate balance between skills and challenges (Csikszentmihalyi, 1990). It is understandable that in order to have a sustained, optimal experience an individual would need to have adequate skills; an individual who is unable to run a mile would not experience the sensation of *flow* by attempting to run a marathon.

One concern in using the flow theory in the investigation of an Internet experience is that goal-directed activities become more nebulous. Several uses of technology (computer games, word processing, online chats) can have a specific goal, yet when it comes to browsing a web site the goal can be more elusive. Finneran and Zhang (2005) caution that goal directed behavior on the Internet can be more difficult to determine as users are able to move freely and can easily wander away from a specific purpose. They maintain that the web functions as more of an artifact than an activity. They suggest that studies investigating flow in regards to the use of the Internet should be divided into three main components: (1) the user, (2) the task or main goal of the activity, and, (3) the artifact that assists the user in accomplishing the task.

Researchers often use the concept of *flow* to study other related constructs such as engagement. The construct of engagement can sometimes be viewed as playfulness, enjoyment, fun, and cognitive absorption. The idea of an engaged audience has emerged as an important goal of interface design. Chen and Wells (1999) report a good web site is one that delivers relevant and well-organized information in an engaging manner. Laurel (1991) defines engagement as the state of mind that we must attain in order to enjoy a representation or action. Engagement entails a type of playfulness, the ability to dabble, or spin hypothetical scenarios. O'Brien and Toms (2005) give another definition of engagement that is even more specific to computer use. They define engagement as the holistic interaction of the user, system, and task that combine to create an emotional, cognitive, and behavioral experience for the user.

Several studies have explored engagement in multimedia presentations. Jacques, Preece, and Carey (1995) feel learners are engaged in multimedia when it holds their attention and they are attracted to it for intrinsic rewards. Webster and Ho (1997) hypothesized that learners will experience higher engagement during multimedia presentations that are: (1) more challenging, (2) higher in feedback, and (3) managed by a facilitator. Said (2004) found, in her pilot study, that children are engaged in multimedia that let them: be in control and manipulate the system, work at their own pace, create and role-play, receive continual feedback, and set goals. In summary, these studies reveal that

engaged users sense a control over the system, receive feedback, are intrinsically motivated, and appropriately challenged.

Engagement has been operationalized within computer-mediated environments (CME) in multiple investigations. Trevino and Webster (1992) and Huang (2003) used aspects of the flow experience as a multi-dimensional construct incorporating the extent to which a user perceives: (a) a sense of control, (b) a focused-attention, (c) an aroused curiosity, and (d) an interaction that is intrinsically interesting. O'Brien and Toms (2005) conceptualize engagement as a process involving three phases: motivation, the engagement, and disengagement. They contend that disengagement can happen because a user has completed a task or because the site failed to sustain his attention. The three phases can be categorized into: (1) the psychological attributes, such as, motivation, perceived control, choice, and challenge; (2) the system's ability to garner the users' attention, either, by the user's first impression or the site's aesthetic appeal, and, (3) sustained focus provided by feedback.

SCHOOL WEB SITES AND USER-CENTERED DESIGN

Designing sites that are found to be engaging to the parent audience can benefit a school in today's educational marketplace. Schneider and Buckley (2000) looked at DCSchoolSearch.com, an educational web site providing information to the parents in the District of Columbia. According to the mission statement, the purpose of the site is to provide parents, grandparents, guardians, and students with important information when choosing a school. Johnson (2000), a parent, as well as, an educator, believes that school sites can provide parents with general information regarding individual classrooms and courses. More importantly, Johnson sees the sites as empowering parents with informed choices for their children's education. He states:

I can as readily choose the kind of school I want for Brady as I can now choose his dental clinic or clothing store. As a savvy consumer, on what will I base my choice of school? Convenience, of course, but I will also want to be sure the teachers in my son's school communicate well, are organized, and see me as a valuable partner in his education. As important as good education is to his future, I can do nothing less. Schools can take an active role in making parent-consumers aware of the quality of their teachers and programs by having, useful, informative, professional class web pages. (Johnson, 2000, Paragraph 23)

One aspect schools and districts need to consider in quality web design is to the needs of the targeted audience. Research in web design has seen a shift from solely usability issues towards a look at the impact of the design on social practices. DePaula (2003) deems that a web site is a collaborative and evolving system which has no value without the active and informed participation of the end-user. She sees the need for research to bring together users and designers of interactive technologies in order to determine what activities engage the user and how a design's features might support those activities. Benun (2003) challenges designers to create sites that balance attractive design with appropriate usability for the intended audience. He encourages them to talk to end-users and find out which features work or do not work.

Many of the studies involving user-centered design have been accomplished in the field of consumer marketing. Chandler and Hyatt (2003) see customer-centered design as starting with a user-centered design approach which then carefully balances and blends relevant customer behavior data from shopping research and behavioral studies. Dalglish (2000) writes that ideas are tested with customers in an attempt to offer the best e-services possible. The testing process is a constant cycle where sites are developed, tested, and redesigned to meet the customers' needs. Benun (2003) describes usability as contextual and in the eye of the beholder, not in the eye of the designer. It depends on the users' needs, goals, technical limitations, web browsing abilities, online habits, and mood. Successful user-centered design requires an understanding of the audience achieved through observations, interviews, surveys, and market research.

Design experts realize that a user will avoid sites that lack features of interest. They have investigated aspects an audience looks for in quality web site design. Krug (2000) establishes audiences want a web page that is self-evident, obvious, and self-explanatory. Childs (2004) indicates individuals are looking for content that suits them and their family circumstances. Zhang and von Dran (2002) investigated user expectations and rankings of quality factors in different web site domains. They found users were looking for sites that: were easy to navigate; contained information that was complete and comprehensive; had site technical features, such as search tools; were current, timeless, and up-to-date; displayed content that was accurate, readable, understandable, and clear. In addition, Spool, Scanlon,

Schroeder, Snyder, and DeAngelo (1999) found that users selected a favorite site because it had information that was relevant and interesting to them.

Quality user-centered designers define and weigh the target audience in the early stages of development. Bowman and Willis (2002) feel that determining the target audience is the first step in the design process; a web site's design should then be developed based on the market research regarding the site's target audience. Wodarz (2001) suggests that the research team know the audience: their demographics, their level of technical fluency, their type of technical equipment, their access to the Internet, as well as, their goals and expectations for the site. Dalglish (2000) recognizes that there may be a wide range of audiences that may visit a web site. She points out that it is not possible to design a rewarding experience for every one who visits a web site, but that designers need to be aware that a site cannot solely be designed with one audience in mind.

SCHOOL WEB SITES: A USEFUL MARKETING TOOL

In designing a school web site to meet the needs of targeted audience, it is helpful to understand its impact as a marketing tool. The educational marketplace includes charter schools, magnet schools, home schooling, private schools, not to mention, schools available through intra- and inner-district transfers. Painter (2001) affirms that marketing has become part of today's educational climate. Lohse and Spiller (1998) have noticed a shift to a more dynamic, robust, and competitive educational environment. The free-market system among schools is seen as a way to introduce competition, foster innovation, and promote equity by giving families more options. Schools within the free-market system have become more accountable to parents, students, and the public. According to Cifuentes, Green, and McNamara (2004) schools are not only educational institutions, but they are cultural, political, and economic institutions, as well.

Schools are facing the challenge of staying competitive within the educational arena. Say, Collier, and Hoya (2001) think it is time for schools to take action within the marketplace. They recommend a strategically planned web site as a powerful tool for informing the patrons of schools. Schneider and Buckley (2000) maintain that modern Internet Technologies (IT) can increase the involvement of parents and create more vibrant

communities which will in turn lead to better schools. Carr (2001) claims a quality web site is an efficient and economical way to market a school. Hinnant and O'Looney (2003) warn that the scrutiny of technological innovations is compounded by the public nature of most governmental processes. The users of school web sites are not only clients but citizens who expect some level of political transparency and accountability in regards to their taxpayer dollars.

A school web site, containing quality design attributes, can be used to effectively market a school on the Internet. McKenzie (1997) stresses two overarching goals of a school web site. First, it acts as information system for site visitors, and, second, it serves as an interface between parents and the school community. He lists four goals of a good school site design include: (1) an introduction to the school and its mission; (2) the identification of educational resources that support the curriculum; (3) the publication of student work; and, (4) a rich database locally collected on curriculum related topics. Carr (2001) determines that the content on the site should be a hallmark of currency, simplicity, readability, and consistency. In addition to the previously mentioned recommendations, Wodarz (2001) adds that it is important to test whether the site is meeting the planned objectives or not.

School administrators can learn from marketing research when it comes to knowing customer expectations in the online marketplace. Bowman and Willis (2002) perceive that the Internet allows more exposure to more companies, and, as a result, the customer is empowered to raise expectations for how the company should deliver the goods or services. Dalglish (2004) notes that as customers get closer to a business on the web their experience of what they have access to increases. In other words, an organization may start with offering solely information, then the customer's expectation increases to include access to problem resolution, and eventually, an expectation to gain access to people. The goal of marketing is to create and keep customers. In order to accomplish this goal, Say, Collier, and Hoya (2001) feel that a successful plan requires a conceptual framework for marketing, the ability to target the audience successfully, and the strategy to position your organization appropriately. Lohse and Spiller (1998) found that designs created with effective customer interfaces have a critical influence on the amount of traffic and sales.

The high visibility of a web presence impacts the public image of an organization. Marketing studies have found a strong correlation between web site image and consumer purchasing behavior. Peterson and Kerin (1983) found that there was a direct correlation between web site image, selection standards, and consumer's purchasing behavior. They define store image as a subjective phenomenon that results from the acquisition of knowledge about the store as it is perceived relative to other stores and in accordance with the consumer's unique cognitive framework. The researchers admit that the image-patronage relationship is a very complex one accounting for only 15-20% of the variance in patronage decisions; store location, pricing, merchandise availability, and several other factors also contribute to a consumer's choice. Chen and Lee (2005) found that web site image had a significant effect on purchasing behavior and purchasing intention of customers. One can posit that a user's purchasing decisions can be influenced by his experience with an organization's web site.

A school's web site becomes part of its public face and contributes to its overall image. For example, van der Geest (2005) makes clear that a web site conveys the image of a technology-minded organization that is on the forefront of new and innovative developments. She also points out, that a web site can improve customer relations by providing convenient, easy-to-access information. A site that displays pages that are attractive, logically consistent, and easy to use, will bring positive experiences to the user and will reflect well on the owner of the site. On the contrary, Grenier (1998) writes, "But a stale web page is as bad as an out-of-date brochure, and projects the same unfavorable image; it has to be treated like the other corporate image materials or "cool" will quickly become ice-cold" (p. 18). Additionally, a web site that provides effective two-way communication can positively influence the organization's public image in providing timely feedback (Abuhamdieh, Kendall, & Kendall, 2002).

An enthusiastic parent, administrator, or board member can positively influence a broad audience via the Internet. Marketing research has demonstrated that interpersonal information exchange affects preferences and choices (Arndt, 1967). A powerful individual can influence an organization either positively or negatively. Feick and Price (1987) call these influential customers *market mavens*. They define them as "individuals who have

information about many kinds of products, places to shop, and other facets of the markets, and initiate discussions with consumers, and respond to requests from consumers for market information” (p. 85). Fulk, Schmitz, and Steinfield (1990) found this to also be the case in individual workers’ perceptions of media. They determined that it was not only the media’s objective features which played a part in an individual’s perception, but that the attitudes, statements, and behaviors of coworkers also had a degree of impact. Schneider and Buckley (2000) envision school web sites as a tool for building of stronger communities. They argue that local schools can provide a venue in which to tap into community building possibilities.

School officials can look to studies done in the business arena to determine some of the critical elements involved with web sites and the user-audience. Palmer and Griffith (1998) looked at the impact of web sites as a marketing tool finding that the use of the web for communication purposes can give a business a competitive edge. Chen and Lee (2005) studied the impact of web image and consumer personality on consumer behavior hypothesizing that web site involvement has a significant influence on web site image and purchasing intention. Hinnant and O’Looney (2003) found a correlation between the use of online services and the external demand for online innovation. Zhang and von Dran (2002) determined that quality factors for users change in different areas of interest. For example, the most important features for an educational web site are different in an entertainment, financial, or e-commerce domain. They challenge web designers to develop attributes for specific domains that can attract users, maintain their interest, and encourage them to return to the site.

SCHOOL WEB SITE QUALITY FROM AN EXPERT’S VIEW

Although, it has been argued that it is important to consider the user audience in the evaluation of web design, it is also critical to measure the quality of the design from an expert’s perspective. Experts can assess the sites equipped with an understanding of model features needed in quality web design. The user’s feedback can then be used to make the site more practical and useful. As previously discussed, web sites used to market schools are unique and cannot be evaluated by experts in the same way as more traditional genres. Breure (2001) sees a web site not as a digitized version of a text on paper, but rather as a

container, which displays all kinds of content components, varying from text and images, to animation, audio, and video. It is often said that checklists, inventories, and rubrics successfully used for print media, often, fall short when used as a measuring tool for a quality web site. For example, Small and Arnone (2001) point to the dynamic and interactive nature of web sites. A site can be updated and revised resulting in a different evaluative outcome from one moment to the next. The ability of sites to be accessed by an unlimited number of target groups provides for more difficulties when looking at a web site's quality features.

Experts provide several descriptors characterizing the aspects of a quality web site. The content of a useful site is accurate, current, authoritative, and purposeful (Smith, 1997). The links are obvious, differentiated from visited and unvisited, and include key information regarding the link itself (Nielsen, 2005). The layout is well-organized and transparent; it is uniform in design including color, font style, and size; it is consistent from page to page. The navigation of a quality site is predictable, visible, and reversible. The site offers choices for users to find the items for which they are looking, e.g., text links, search field, index, and site map (Benun, 2003).

School web designers can also benefit from knowing the experts' ideas on user friendliness in regards to web sites. Usability is an attribute that is closely connected to the audience and defined by the experts in a variety of ways. For example, Benun (2003) sees a usable web site as one that allows the users to do what they need to do, or find help easily without getting frustrated. Krug (2000) defines usability as something that works well, for a user with average, or even below average, technical skills. Nielsen (2000) associates system's usability with ease of learning, efficiency of use, ability to be revisited, and a reduced number of user errors. Spool, Scanlon, Schroeder, Synder, and D'Angelo (1999) attach their definition of usability to the goals of the user. A usable site is one that allows the user to accomplish his goals with effectiveness, efficiency, and satisfaction. A user-friendly web site is complex; it requires integration from a variety of backgrounds and disciplines. Dalglish (2004) makes a list of important design team members including: cognitive architects, creative architects, information architects, system architects, content strategists, program managers, project managers, producers, consultants, and interactive strategists.

Unfortunately, the literature reveals very few empirical studies regarding quality criteria for the evaluation of web site design. Much of the information comes through trade journals, online publications for web designers, or practitioner journals. It often comes in the form of heuristics and checklists (Abuhamdieh, Kendall, & Kendall, 2002; Carr, 2006). With a few exceptions, the evaluation checklists are based on traditional usability criteria, rather than, on empirical evidence (Zhang & von Dran, 2002). One study did create a checklist based on the motivational quality of the site. Small and Arnone (2000) developed a web site evaluation tool, grounded in Vrooms' (1995) theory of work and motivation, however, their tool was not well validated. Tsai and Chai (2005) developed and validated a web site questionnaire, but the quality criteria, included on their list, are specific to the field of nursing.

CHAPTER 3

METHODOLOGY

INTRODUCTION

Today's districts and the schools within them compete for students, and often use the web to market their services and showcase their accomplishments. Web sites are a part of the public face of education; those that feature attributes found engaging to specific user audiences can enhance a district's public image and create a perception of excellence and competence. This study involves an exploration of how one suburban, K-8 school district approaches web site development, specifically, the process by which decisions about design, development, and maintenance oversight are made (and by whom); the ways in which the school sites engage the parents who explore them: and, how well the sites adhere to generally recognized design attributes.

A study, such as this, requires a methodology that explores the sites within their social context. O'Brien & Toms (2005) maintain that engagement is a complex interaction of the user, system, and task that together create an emotional, cognitive, and behavioral experience. Therefore, a case study was deemed the most appropriate methodology for this investigation in that it is an investigation of a bounded system over a period of time, with detailed, in-depth data collection involving multiple sources of information, rich in context (Creswell, 1998).

The methodology described in this chapter reveals the researcher's intent to provide a research design that was multi-faceted. The data were collected from a diverse group of participants and analyzed using both quantitative and qualitative techniques. The chapter is organized as follows:

- A description of the study's data sources involving nine key personnel staff members, two relevant documents, 199 parents surveyed at four selected schools, three parent focus groups, and nine school web sites.

- The instrumentation used to collect the data including protocols for both the key personnel and parent focus group interviews, the survey distributed to second and fifth grade parents, and the rubric used to measure engaging web design attributes.
- The data collection procedures related to key personnel interviews, parent surveys, parent focus groups, and web site assessment.
- The data analyses techniques involving both quantitative and qualitative outcomes for each of the three research questions posed.
- The limitations of the study.

SOURCES OF INFORMATION

The section that follows describes the school district involved with this case study. It highlights important details about the nine key personnel interviewed by the researcher; the documents selected for review; the four schools represented in the parent survey; the parent focus group participants; and the web sites of the district's nine schools.

School District

During the process of her investigation, the researcher experienced several individuals who were not only proud of the district's quality academic programs, but also of the students' outstanding test performance. The district is part of a mid-sized suburban community about 15 miles east of San Diego. It is relatively small, with eight K-8 schools and one K-6 school. In 2007, the last year for which data were provided, the California Department of Education reports the district's student population was just over 6,000. The population is predominantly white with only 30% non-white. The non-white population breaks down as 12% Hispanic, 5% Asian, 5% Filipino, 2% African American, and 6% other. Less than 8% of the district's students qualified as English Learners (EL) and 22% of the students are eligible for free and reduced lunches. The district's Academic Progress Index (API)¹ is 826 for the 2006/07 academic year (above the State's target of 800). There is a stable teaching and administrative staff with 374 certificated members averaging 15 years of experience overall, with an average of 14 years working in the district.

¹ Academic Progress Index is a numeric index or scale, used by the State of California to measure a school's academic performance. The score ranges from 200 to 1000. The statewide performance target for all schools is 800.

Although this is a K-8 district, student needs and parent interests are not uniformly the same. Students at the elementary level are beginning to learn; they are developing their emergent reading, writing, and mathematical skills. Elementary students are more dependent on parents to support them in their learning, homework, and other school related activities. A child in middle school is better equipped to assume more of his own learning and school-related responsibilities. In order to eliminate any confusion resulting from these uniquely different age level groups, the researcher opted to narrow the study's focus to grades K-6. She purposefully selected both 2nd and 5th grades in order to sample parent interests from both the lower and upper elementary grades.

Key Personnel

The researcher conducted interviews with nine key persons associated with the district's school web sites. The interviews included three policy makers, four members of the support staff, and two teachers. Each of the nine individuals was able to provide a different perspective on the interview questions that the researcher posed. The multiple viewpoints gave the researcher a rich source of data in order to triangulate her findings.

The three policy makers offered an administrative perspective of decisions and policies related to web site design and development.

- The Assistant Superintendent shared information based on her knowledge of the district's Strategic Plan.
- The Director of Educational Technology offered his insights on staff development targeting the development of the district's web presence.
- One of the district's nine principals presented her plans and intentions for web site development at the school level.

The four members of the support staff provided insights about the implementation of the district's web site plan. Each connects closely with the teaching staff, drawing on his/her particular area of expertise to train teachers and maintain the network infrastructure. The Coordinator of Instructional Technology and the Curriculum Resource Teacher work with teachers to develop classroom web sites and are ultimately involved in the process. A design consultant shared her experiences working with educators and school web sites not only with this district, but also with other districts in her region. The Director of Information Systems

described the network's infrastructure, specifically, its history, current capacity, and plans for future growth.

The two teachers interviewed discussed school web site development from a "grassroots" level. Both are at separate school sites and work closely with students, parents, and administration. Each teacher represented different grades, levels of design expertise, and number of years of teaching.

Documents

The researcher reviewed the district's Strategic Plan and the Technology Plan for the years 2006-2009. She gained several insights into the goals for its educational program in general and its goals for technology specifically.

She examined the Strategic Plan to become familiar the strategies and intentions of the district's program. The plan focuses on recommended actions for accomplishing goals related to student resiliency, educational opportunities, student learning, fiscal solvency, facilities, parent/community partnerships, and marketing.

The researcher studied the Technology Plan to gain an understanding of the district's vision for technology including its role in curriculum planning, delivery of assessment, as well as staff development, budgetary issues, technology purchases, maintenance, etc. It highlighted many of the district's intentions to improve: technology usage in both classroom and district business; the marketing of the district via a sound web presence; and, online communication between home and school.

Parent Survey Schools

Four schools participated in the distribution of surveys to the parents of second and fifth grade students. Details regarding the selection process are described in the section below entitled, *Parent Surveys/Focus Groups*. As highlighted in Table 1, each of the four selected schools represents a distinctly different student population in regards to grade span, K-6 enrollment size, percentage of English learners, free/reduced lunches, API scores, and Title I status.

Table 1. Surveyed Schools' Demographic Information

School	Grade Span	K-6 Enrollment	% of English Learners	% of Free/ Reduced Lunches	2006-07 API	Title I Status
School 1	K-6	384	27%	46%	779	Title I
School 2	K-8	524	11%	29%	827	Title I
School 3	K-8	604	6%	16%	842	Non Title I
School 4	K-8	314	10%	22%	886	Non Title I

Note. Adapted from the California Department of Education. (2007). Data Quest. Retrieved January, 20, 2008 from <http://dq.cde.ca.gov/dataquest/>

Parent Focus Groups

The focus groups took place off campus at a local coffee shop. The parents selected the time and day that was most convenient for them. The discussion groups represented parents from Schools 2, 3 and 4 (School 1 was not represented²). The groups were comprised of a combination of 10 parents from the represented schools. Two of the schools had three parents and one had four parents in attendance. The groups varied in size with four in the Thursday morning group, two in Thursday evening group, and four in the Friday evening group. The participants included both traditional and non-traditional caretakers: single moms, a long distance dad, working parents, grandparents, and stay-at-home moms. There were two men and eight women attendees. Common to all in attendance was at least a passing familiarity with their child's school web site and a general confidence in their own browsing skills. None of the parents knew each other, however, most enjoyed the discussion and lingered long afterwards to chat and be friendly.

² School 1 had only two parent volunteers (the fewest from the four selected schools), and both were "no-shows".

School Web Sites

The district's nine school web sites were analyzed for engaging web site attributes. All the sites have recently been transitioned to a newly purchased content management system (CMS), *Schoolwires*® (see <http://www.schoolwires.com>). While the web sites reflect some continuity imposed by the CMS, all of them contain school specific design features. The webmasters of most of the schools' sites are teachers (assigned the task as an adjunct duty). Two members of the district's support staff maintain one site in addition to other job responsibilities. Each of the nine webmasters has a different level of design experience ranging from minimal to extensive.

INSTRUMENTATION

The researcher developed three instruments to gather data: interview protocols for both the key personnel interviews and the parent focus group interviews; parent surveys; and, a web site design rubric. Each of these tools is detailed in the subsections that follow.

Interview Protocols

Dialogue for the *key personnel interviews* was guided by a semi-structured question protocol to ensure all aspects of the investigation were covered and to make maximum use of the time allowed the researcher. The questions for the key personnel interviews were categorized under three broad themes the purposes, constraints, and enablers of school web sites (see Appendix A). The questions were open-ended to encourage a conversational tone.

The *parent focus group interview* was also directed by a semi-structured question protocol. The researcher designed the questions in order to elaborate on issues first raised in the parent survey. The questions focused on the parents' perceptions of their child's school web site, for example, its currency, content, and appearance; their reasons for accessing and browsing the sites; and, their needs for online communication, payment options, or emergency alerts. The protocol was used to guide the researcher as she led the discussion and maintained an informal relaxed atmosphere.

Parent Survey

The researcher constructed a survey to learn how well and in what ways each specific school web site engaged parents as a targeted audience (see Appendix B). The first part of the survey was largely demographic: the age and number of children in the district; type of home Internet access; and the three reasons for using the Internet, selected from a list of choices provided on the survey. The second section asked respondents to rate their level of interests (either *high*, *somewhat*, or *little*) in 12 content areas common to school web sites such as, grade level academic standards, principal's newsletter, calendar of events, and so on. The survey closed with an invitation for parents to participate further in the study by joining a focus group discussion. They indicated their desire by writing their name, phone number, and email address in the space provided. As earlier noted, they also were able to specify the times and days that were best for them to meet.

Web Site Rubric

The researcher developed a web site rubric by combining quality web site design attributes along with aspects of engagement theory (see Appendix C). The rubric was created to measure the design's ability to engage the targeted audience. The site's navigability, content, appearance, and helps were associated with five categories of engagement *sense of control*, *intrinsic motivation*, *enjoyment*, *helps to reach goal*, and *focused-attention*. The two content areas, associated with *intrinsic motivation* and *focused-attention*, were designed to be modified and adapted in order to address specific web site genres, i.e. sports, education, entertainment, and so on.

The initial draft was reviewed by 10 Educational Technology (EDTech) graduate students enrolled in a class focused on web design principles. The class provided input into the following key areas: the attributes, descriptors, and the weighting of the five engaging categories. The researcher then modified the rubric according to the recommendations given by the students. She assigned the two content categories, *intrinsic motivation* and *focused-attention* a greater weight in scoring their key components as these categories were viewed as more critical to audience engagement.

The web site rubric ultimately employed features associated with quality web site design, and more specifically with end-user engagement; the features are organized into five categories: *sense of control*, *intrinsic motivation*, *enjoyment*, *helps to reach goal*, and *focused-attention*. In order to accurately address the genre of K-6 school sites, the researcher modified the descriptors of the rubric's two content areas (*intrinsic motivation* and *focused-attention*). For example, when she considered the descriptor worded as *The scope of the content is broad and comprehensive* she adjusted *broad and comprehensive* to mean a wide range of information across all grade levels. The outcomes of the parents' interests from both the parent surveys and focus groups were also considered when modifying the descriptors; a calendar of events was found to be an item of high interest to parents and was deemed to be an important feature when she assessed the sites. It was not necessary for the researcher to change the descriptors of the other three engaging categories (*sense of control*, *enjoyable*, and *helps to reach goal*) because they are consistent across the genres.

Each of the 20 attributes was scored via a five point ordinal scale ranging from *exemplary* (5) to *lacking* (1). An open-ended comments section was included, so the researcher could record her rationale for various scores given to the nine school web sites. Table 2 illustrates the rubric's scoring schema, organizational structure, and weighted point values.

Table 2. Web Site Rubric Engaging Categories and Possible Point Values

Engaging Categories	Design Focus	Possible Point Value
<i>sense of control</i>	Navigability	20 points
<i>intrinsic motivation</i>	Content	30 points
<i>enjoyable</i>	Appearance	20 points
<i>helps to reach goal</i>	Helps	15 points
<i>focused attention</i>	Content	15 points
	Possible overall score	100 points

PROCEDURES

Data collection was multi-faceted with information gathered from five different sources: key personnel, documents, parents (surveys and focus groups), and web sites

(rubric). The following section is a description of procedures used in the data collection from each of the five sources, grouped by the research question being investigated.

Key Personnel Interviews/Document Reviews

Data collection began by investigating RQ1: *What are the purposes, as well as, the constraints and enablers that underlie the building and maintenance of a district school web site?* The researcher met with nine different district level staff members whose responsibilities were related to the development and maintenance of the schools' web sites. Interviewees were first identified by scanning the district's web site and were contacted by the researcher via email. She set an appointment with each one and met in his/her office for an intended 30 minute meeting. The researcher first presented each participant with a letter of informed consent (see Appendix D) and then conducted the interview guided by a semi-structured interview protocol (see Appendix A). The discussions were audio-taped and transcribed by an independent third party.

The researcher also scanned the district web site for any documents relevant to the study. She located and downloaded both the district's Strategic Plan and Technology Plan. She read the documents and then prepared a summary for each. She organized the summary by first describing a global perspective of each plan and then gave specific details on topics closely related to the study's purpose.

Parent Surveys/Focus Groups

The next phase of the data collection addressed RQ2: *In what ways and how well do the school web sites engage the parents as a specific target audience?* The researcher used stratified random sampling to select four schools from which to draw the second and fifth grade parent participants. The nine schools of the district were first sorted into four categories by Title I status and size of enrollment. She chose second and fifth grades in order to represent both primary and intermediate grade levels; Title I and non-Title I schools to sample students with different socio-economic status (SES); and, the size of enrollment to include schools with various levels of state funding based on average daily attendance (ADA). One school from each category was randomly selected and the principal of the school was contacted to obtain permission to survey and interview parents of second and fifth

grade students. In one case, after several attempts the researcher could not reach the principal to receive permission; she contacted the next school in the same category to ensure that all four groups were part of the study's sample.

The researcher gave the second and fifth grade teachers from all four schools an envelope containing the parent survey for each of their students to take home (see Appendix B). The students received a pencil as an incentive for doing so. A separate cover letter was attached to the survey informing parents of the purpose and the importance of their feedback in the study (see Appendix D). Each survey also contained a stamped, pre-addressed envelope for respondents to mail back their replies directly to the researcher's post office box.

As part of the parent survey the respondents were invited to participate further in the study by joining a discussion group. The respondents who expressed a willingness to participate were contacted through information they indicated on the survey. The researcher made arrangements with three groups of parents to meet at a local bookstore. She provided coffee and cookies to welcome those who came. The researcher first shared a letter of informed consent with each participant (see Appendix D). She conducted about a 45 minute discussion guided by semi-structured question protocol (see Appendix A). The sessions were audio-taped; in addition, a scribe assisted by taking notes. The recordings were then transcribed by an independent third party and were later analyzed.

Engaging Web Site Design Evaluation

The final phase of the data collection attended to RQ3: *To what extent does the design of the school web sites contain attributes that attend to the engagement of the end-user?* The researcher explored all nine schools' web sites using the Engaging Web site Design Attributes Rubric (see Appendix C). As previously discussed, the researcher modified the rubric descriptors for intended purpose and content to reflect the input received from the other four information sources. She scored the sites using a five point ordinal scale ranging from *lacking* (1) to *exemplary* (5). She scored a zero for all attributes not found on a site. Comments were recorded to denote the researcher's reasons for many of the scores.

DATA ANALYSIS TECHNIQUES

Since both quantitative and qualitative data were gathered during the study, the researcher utilized a variety of analytical techniques. She performed not only a constant comparative analysis on the qualitative data, but also both descriptive and inferential statistical analysis on the quantitative data. The techniques are described in the following subsections listed in order of the study's three research questions.

RQ1: Influential Factors

The nine key personnel interviews and the document reviews associated with research question one resulted in mostly qualitative data. The data were analyzed to identify influential factors surrounding the development of school web sites. Following the traditions of qualitative design, the researcher began the data analysis with general overview of the interview transcripts, and document review notes (Creswell, 1998; Glesne, 1999; Merriam, 1998; Patton, 2002; Stake, 1995; Yin, 1994). She then identified 17 codes related to the purposes, constraints, and enablers involved with the development and design of web sites in the district. Once the codes were identified, she applied the codes to each of the key personnel interviews and document summaries using HyperREARCH™ software, a tool for qualitative analysis. She surveyed the transcriptions looking for phrases and concepts which were associated with the previously identified codes. She then reviewed the results for accuracy; combining redundant codes and reassigning divergent codes. The researcher created 10 additional codes to allow further exploration of the data. The data were then reduced into four major themes through a process of comparing data across the interviews and determining emergent patterns. The researcher organized the data results into three groups: policy makers, support staff, and teachers. She then used the resulting patterns to draw her conclusions about the case.

RQ2: Parent Feedback

The information sources for RQ2 included 199 parent surveys and three parent focus discussion groups. The data for the parent surveys were analyzed with both descriptive and inferential statistics. The data were entered into SPSS, a software tool used for statistical analyses. First, frequencies for the demographic data were calculated (age range, number of

school aged children, Internet access, level of Internet usage, and reasons for accessing the Internet). Second, frequencies were calculated for the 12 questions regarding the parents' *level of interests* (either *high*, *somewhat*, or *little interest*) in content areas commonly found on school web sites. Next, the researcher ranked the level of *parents' interests* for each of the 12 content areas from greatest to the least to better explore the survey participants' responses. She then recoded the ratings for *high* or *somewhat* into one code thus representing *parents with interest* for each of the content areas. She used the newly created codes to investigate the dichotomy between *parents with interests* and *parents with little interests*. A chi square test was done to determine if the frequencies for the parent responses were dependent on either *Title I status* or the *enrollment size*.

The 12 variables representing the *interests of parents* were disaggregated into four groups; each of the groups representing one of the purposes of a school web site i.e., *communicating, informing, marketing, and showcasing*. The means for the four variables were calculated and a one-way analysis of variance (ANOVA) was run on the categories to determine if there was any significant difference between the *parents' interests* and *Title I status*. A second ANOVA was run on the same four mean ratings using *school* as the independent variable to investigate a possible significant difference between the *parents' interests* and the four schools surveyed. For every significant result, a TUKEY post hoc test was run to determine where the differences lie.

RQ3: Web Sites' Engaging Attributes

The researcher performed a mixed methods analysis of the district's nine school sites. She scored each site using an evaluation rubric designed to measure 20 engaging web site attributes. The sites' designs were assessed using a 5 point ordinal scale to determine in what ways each of the nine schools' web sites contained design attributes which engage the targeted parent audience. The data were entered into SPSS, a software tool used for quantitative analysis. The frequencies as well as the mean ratings for each of the 20 attributes were calculated along with the totals for each of the five areas of engagement, i.e., *sense of control, intrinsic motivation, enjoyable, helps to reach goal, and focused attention*.

The researcher also did a qualitative analysis on the comments she generated during her assessment of the schools' web sites. She transcribed the comments and then scanned the resulting document. She identified 10 codes related to engaging web site design and then applied the codes using HyperREARCH™, a software tool for qualitative analysis. The researcher then used the organized data to provide a rationale for the quantitative results of the web site survey.

LIMITATIONS

The case study was limited by factors that the researcher could not fully control but she is ethically bound to identify. The limitations include: the dynamic nature of the web sites and web design; a bias towards the participation of technology minded parents; and, the lack of representation from non-English speaking families.

Dynamic Nature of Web Sites

The dynamic nature of the Web limits this study. A webmaster has the ability to change the amount and the type of information easily and efficiently. The web sites examined by the researcher during the course of the study will most likely change a few short months from now. Sites perceived as current may become out dated. Sites seen as lacking may improve. Since the district was in a transition phase, changing over to a Content Management System (CMS), the researcher fully expects the sites to take on a different look. Although the data outcomes emerging from this case study cannot be replicated; still, the results can be used to inform future school web site development efforts.

Technology-Minded Survey Respondents

The researcher sent surveys to all parents of second and fifth graders at the four selected schools, but some parents may not have responded based on their lack of Internet awareness. One might argue that the 199 survey respondents were the web savvy parents with more experience and a higher comfort level with Internet use. The response rate would then represent a bias towards individuals with better Internet skills while under representing parents who perceive themselves as lacking skills. While all 199 respondents represented

parents of the district, interested in their children's school web sites, the parameters of the study did not allow them to express their confidence level with using the Internet.

Non-English Speaking Families

Another limitation of the school web site study was that all data were collected in English only. Although, the majority of the students spoke English, there was a portion of the population whose home language was other than English. All four of the selected schools had a range of English Learners (EL) from a low of 6% to a high of 27%; yet, the surveys, the interviews, and the web sites were all in English. Parents with limited English speaking, reading, and writing skills may have been under represented. Section 48985 of the State of California Education Code (2007) requires schools and districts serving language groups representing 15% or more of the site's student population to send notices, reports, statements, or records to the parents translated into the student's home language. Although School 1 had the highest number of Spanish speaking English Learners (EL) in the sample, the student group represented 11.9% of the entire student population. The number of Spanish speaking students in the two sampled grades totaled 13. The researcher did not feel that 13 Hispanic translations were cost effective for a study of this kind. However, the lack of funds does not preclude the fact that some families may have been excluded. This may also explain why School 1 was under represented during the parent discussion groups.

CHAPTER 4

FINDINGS

The following chapter presents the study's findings. The findings are organized around the three research questions detailed in the methodology. First, the data results from the nine key personnel interviews and two document reviews are discussed. Second, the data outcomes of the parent surveys and focus group interviews are explained. Third, the scores and comments from the assessment of the district's nine school web sites are given. The chapter concludes with a summary of the data findings.

FINDINGS RQ1: INFLUENTIAL FACTORS

This initial section describes the qualitative data analyses (for nine key personnel interviews and two document reviews) performed to address Research Question 1 (hereinafter RQ1)—which focuses on *the purposes as well as, the constraints and enablers that underlie the building and maintenance of a district school web site*. The section is structured in the following way: (a) background information for the key personnel interviews; (b) a summary of the relevant documents; and, (c) key findings.

Background of Key Personnel Participants

The researcher was careful to select interviewees from a broad spectrum of district employees associated with school web site design, development, and maintenance; three represent district policy makers, four are members of the support staff, and two are classroom teachers (one primary and one intermediate). Relative to web site responsibilities, six of the nine are webmasters of either a school or the district's web site, while the other three are not involved with the design process. Not only do the nine participants perform a variety of jobs within the district, but they differ in terms of their years of experience, levels of expertise with technology, and "formal" knowledge of web design. Table 3 more fully characterizes each participant.

Table 3. Key District Personnel Interviewed

Position	Title	Webmaster
Policy maker	Assistant Superintendent of Educational Services	No
Policy maker	Director of Instructional Technology	Yes
Policy maker	Principal	No
Support staff	Coordinator of Instructional Technology	Yes
Support staff	Curriculum Resource Teacher	Yes
Support staff	Software Consultant	No
Support staff	Assistant Director of Information Technology	Yes
Teacher	5 th grade teacher	Yes
Teacher	3 rd grade teacher	Yes

Emma Andes, District Assistant Superintendent of Educational Services, has nearly 30 years of experience in the field of education. She has been a classroom teacher, reading specialist, curriculum coordinator, assistant principal, and principal—and admits to having very little experience with technology and web design. Emma is particularly concerned with the currency of some of the schools' sites and wants to see them updated.

Earl Nevres, Director of Instructional Technology, was recently appointed to his position. He was a school principal for several years, and during his tenure developed and maintained his school's web site. Currently, he uses his design expertise to upgrade and maintain the district's web site. Not surprisingly, Earl is an active contributor to many of the district's decisions related to web site design and development--an integral part of the district's vision to present a more professional and businesslike appearance on the Internet.

Sara Ponce is principal at one of the district's K-8 schools. She has been in this position for two years and has prior experience as a classroom teacher, resource specialist, and banker. She has participated in many of the district's committees involving technology decision making. Sara helps to maintain her school's web page and would welcome more training in web design.

Kari Hammel is a curriculum resource teacher responsible for staff development related to technology—and provides training for/with Front Page, Web Blender™, and the

various components of Microsoft® Office. In addition, she is webmaster of a Title I school where extra technology funding was granted. Kari is well aware of the diverse skill levels of teachers as she helps to support them in developing and maintaining their classroom web sites.

Mark Mansmer is Assistant Director of Information Technology. He worked his way up through the ranks and has been involved with the expansion of the district's network infrastructure from its inception. He is currently the district's systems administrator, overseeing the student information system (SIS) and responsible for web services; he also helps to maintain the district's web page. What stands out about Mark is his enthusiasm and upbeat nature. He finds a silver lining whenever the district's network fails; even though inundated with phone calls about the status of school and classroom web sites, he's encouraged that people are concerned.

Lily Spence is Coordinator of Instructional Technology. She was hired last July after working for seven years as a teacher in the Lemon Grove School District, where she was a part of the Lemon Link Project, a program networking the community and schools via the Internet (see: <http://www.lgsd.k12.ca.us/lemonlink/>). While in the classroom, Lily developed and used a classroom web site for instruction and parent communication; this experience helps her as she works with teachers at one of the district's schools to develop their own classroom web sites. Lily has a solid understanding of engaging web design attributes and can chat fluently about images, homepages, and site navigation.

Melanie Kole is a consultant for Tech4learning. She leads trainings for the software company and helps the district implement Web Blender, a web authoring tool for entry level web designers. Melanie works closely with teachers at two of the district's schools and believes that web site design gives them a sense of accomplishment, which in turn reduces their fears of technology and makes them more willing to integrate it into their classroom instruction.

Carter Willis is an experienced teacher who works primarily with Gifted and Talented Education (GATE) students. He is highly involved with technology in his classroom using his exceptional web design skills as a classroom teacher. Carter's classroom web site features several links to outside resources, a blog, access to classroom assignments,

and much more. He uses his classroom site to inform parents, interact with students, and showcase student work. Carter also serves as the webmaster of his school's site.

Marie Dibble is a 3rd grade teacher at a K-8 Title I school site. She has helped with technology at her school for the past 10 years, and has been the school's webmaster for the past seven. Marie admits to having very little design experience and doing only the basics when it comes to maintaining her school's web site. In a sense, Marie represents the plight of many teachers with classroom web sites; she realizes the importance of currency in quality web design, but she says her own classroom web site is outdated due to lack of time.

Document Summaries

The researcher reviewed two documents determined to be pertinent to RQ1—the district's Strategic Plan for 2006-2009 and the Technology Plan for 2006-2009. The following section summarizes each plan in general and then, in more detail, describes selected areas determined to be closely associated with the present study.

STRATEGIC PLAN

In 2005-2006, a group of teachers, classified staff, administrators, the Superintendent, and the School Board assembled to develop a three year Strategic Plan for the district. After conducting interviews and surveys of staff and community the committee identified seven strategic sections for the district to address. The sections are classified by program area, specifically: those that impact students (areas: student resiliency, educational opportunities, and student learning), those that impact resources (area: fiscal solvency), those that impact the learning environment (area: facilities), and those that affect the community (areas: parent/community partnerships and marketing). The plan showcases the district's goals and intended actions for the following: (1) student learning in both academics and character building; (2) maintenance and modernization of district's buildings and equipment; (3) parent education; and, (4) the marketing of the district to the surrounding community.

Although the researcher reviewed all areas of the Strategic Plan, she felt that *parent education and the marketing of the district* were the only relevant sections for purposes of this study. Two key goals are at play here. One is to develop a parent education program offered to all parents. The first step in achieving this goal was an "interest" survey to the

parent community—distributed in May-June, 2006. A parent education program was planned for development in the summer of 2006 and then implemented in the 2006-2007 academic year. Classes were held instructing parents regarding Internet safety. No evidence found to indicate parents were offered classes associated with school web site usage.

The second pertinent area of the Strategic Plan was to *market the district* to the outside community, in essence, calling for a proactive stance that would ensure a competitive edge over charter and private schools in the area. The action steps here include (a) development of a brochure to market the school district to be distributed by real estate brokers in the area; (b) active recruitment of business and community partners; and, (c) placement of marketing information on the district's web site. The school site administrators created the marketing brochures, business partners were actively recruited to sponsor special technology funding, and a content management system (CMS) was purchased to establish an improved web presence in order to market the district on the Internet.

TECHNOLOGY PLAN

The Technology Plan for 2006-2009 reveals much of the district's vision for technology. It is a comprehensive document, covering an expansive range of technology related subjects (curriculum, professional development, budget, infrastructure, and evaluation). The Plan calls for the district to be a recognized leader in education by setting the standard in all its endeavors—and features several objectives:

- Integration of technology and the curriculum into each site's instructional plan.
- On-going professional development for both classified and certificated staff.
- Establishment of technology plan templates that each site will develop, implement, and monitor.
- Development of learning outcomes for students at various grade levels and the benchmarks to evaluate annual learning outcomes.
- Budgetary steps needed to provide effective technologies for both the business and classroom services.

Although the researcher reviewed the entire document, she determined there were three areas which specifically addressed RQ1: (1) the district's goals for classroom web page design;

(2) parent access to online student data; and (3) use of the Internet to connect home and school.

The first goal relates to the design and maintenance of classroom web pages. The district has formally adopted the International Society for Technology in Education (ISTE) National Educational Technology Standards (NETS) for teachers, students, and administrators (see: <http://www.iste.org/AM/Template.cfm?Section=NETS>) but the committee recognizes that their implementation has been inconsistent. Most of the district's teaching staff has received limited training regarding the ISTE (NETS), and they are not aware of how to implement the standards into their daily classroom learning experiences. In fact, only a small group of teachers has created technology lessons or classroom web pages, or experimented with various digital curricula. The plan outlines actions to accomplish this goal by (1) asking teachers to develop classroom web pages with dynamic content, and (2) distributing an impact survey to parents and students of teachers who have classroom web pages. Although the planning committee had included the design and maintenance of classroom web pages, their plans did not indicate if teachers would be trained about attributes of quality web design or if the sites would be assessed for design quality.

The second study related goal describes an intention of providing parents access to their children's online data. The district uses the PowerSchool student information system (SIS)--which was "installed" in 2003 (and thus precedes the Technology Plan by three years). The intent here is to (1) open PowerSchool's parent portal, (2) provide parents passwords, and (3) encourage (but not require) teachers to provide online grades for parents and students to access on a regular basis.

The third related goal is to improve two-way communication between home and school—in essence, offering students, parents, and teachers the technological capacity to communicate with one another. The goal was to be accomplished by encouraging parents to seek the Internet in order to enhance their children's learning experiences and giving them the opportunity to access and participate in their children's learning environment through shared technologies. Teachers were asked to integrate a variety of online instructional tools into their classroom teaching, i.e., blogs, WebQuests, podcasts, and distance lessons. The

actions were to be implemented in phases targeting 20 classroom teachers per year beginning in 2006.

Findings Key Personnel Interviews and Document Review

The goals, intentions, and decisions of key personnel are influential in establishing the web presence intended for parents as end-users. The policies and perceptions of the administrative staff have a direct impact not only on the district's web presence but also on the engaging design attributes offered to parents. The researcher conducted nine interviews in order to identify a variety of factors surrounding the influencing development of school web sites. Those factors became themes or codes (27 in all; see Appendix E) which she then applied to 292 total occurrences using HyperResearch™ software, a tool for qualitative analysis. She then clustered the codes into four major themes: (1) purposes of the district's web sites; (2) enablers that facilitate their development; (3) constraints that hinder their development; and, (4) interviewees' knowledge of engaging web design attributes. The researcher grouped the data results by type: policymakers, support staff, and teachers. It is important to note that all occurrences found in the two document reviews were included with the policymaker group. Table 4 depicts the number of codes, the frequencies, and percentages of the occurrences for all three key personnel groups investigated.

Table 4. Codes, Frequencies, and Percentages of Occurrences by Theme

Theme	Number of Codes	Number of Occurrences	Policymakers & Plans (n=5)	Support Staff (n=4)	Teachers (n=2)
Purposes	6	61/ 21%	29/ 27%	27/ 18%	5/ 14%
Enablers	10	130/ 44%	47/ 43%	65/ 44%	18/ 48%
Constraints	6	52/ 18%	18/ 17%	29/ 20%	5/ 14%
Knowledge	5	49/ 17%	14/ 17%	26/ 18%	9/ 24%
Total	27	292/ 100%	108/ 100%	147/ 100%	37/ 100%

PURPOSES

Critical to exploring engaging web site design is gaining an understanding of a site's purpose(s) or intentions(s). Purpose or intent necessarily drive choices and decisions people make about content, use of images, user options (feature sets), and functionality. For example, a school interested in promotion or marketing might have a site that highlights its test scores, student demography, and community involvement. But a “showcasing” angle might call for display of the accomplishments of students, teachers, or parent groups. A focus on communication would lead to a design that emphasizes calendars, lunch menus, email addresses, and phone numbers. It is essential to know the purpose of a site before one can examine its engaging attributes—and to recognize that complex sites (including those of schools) have competing purposes or intentions to which it must attend.

Interviews with key district personnel helped the researcher determine the purposes or intentions associated with the school web sites in this particular district (see Appendix A). Analysis revealed five—specifically: (1) *communication tool*, (2) *marketing tool*, (3) *informational tool*, (4) *showcasing tool*, and (5) *facilitating district business*. She determined, however, that *facilitating district business* was not relevant to the parent audience and chose not to further explore it. Additionally, the code for *the intended target audience* was considered by the researcher to be closely related to the design's purpose, but it was not specifically designated as a purpose. The data revealed that the district's *intended target audience* was most frequently parents. Interviewees also included students, teachers, administrators, and the community in their answers regarding the web sites' *intended target audience*. Table 5 displays the frequencies and the percentages of the totals for each of the codes related to school web site purposes.

The following comments exemplify the four purposes: a *marketing tool*, an *informational tool*, a *showcasing tool*, and a *communication tool*. Note that some remarks represent multiple purposes.

- *I see the Internet mainly as a way of communicating with the public and outside sources as far as marketing our district, as far as a means of communicating better with parents by the use of the individual class web pages, emails, and ways for parents to communicate with staff. (purpose = marketing)*

- *But the kids use it as well and the reason they use it is because we have links—you know, good Internet links for kids to use, so the teachers use that as well or they bring their class in and they'll say go to this web site, the link is on the school web site. (purpose = informational tool)*
- *So it was kind of this evolving tool that teachers could use in the classroom, but now we've used it as a tool to showcase what makes our district great. We have great test scores. We have a wonderful staff and teachers to showcase and we can showcase projects. We can showcase all kinds of things. It is a mechanism now to show what we do well, as well as, an ability to keep promoting that home-to-school connection. (purpose = showcasing tool and marketing tool)*
- *When teachers create their web sites what we're hoping is that they would build some sort of home-to-school connection. Share what is happening in their classrooms. (purpose = communication tool)*

Table 5. Frequencies and Percentages of District School Web Site Purposes

Purpose Code	Policymakers & Plans (n=5)	Support Staff (n=4)	Teachers (n=2)	Total
Communication tool	3/ 13%	5/ 24%	1/ 25%	9/ 19%
Marketing tool	9/ 39%	3/ 14%	1/ 25%	13/ 27%
Informational tool	5/ 22%	5/ 24%	1/ 25%	11/ 23%
Showcasing tool	6/ 26%	8/ 38%	1/ 25%	15/ 31%
Total per group	29/ 100%	27/ 100%	5/ 100%	61/ 100%

ENABLERS

The purpose of a school's web site is accomplished through the district's strategies, budgetary choices, and practices that either directly or indirectly support its design and development. The factors that support web site design may be referred to as enablers—and might include opportunities staff development, time allowances or allocations, or software and equipment purchases. The researcher identified a total of ten areas she determined to support the development and maintenance of the district's school web sites. *Administrative expectation* and *Schoolwires (CMS)* were comments that all three groups frequently made. Teachers did not mention *budgetary allotments*, *equipment*, or *parent education*—although members of the other two groups did. The support staff provided 11 of the 14 comments regarding design feedback. Table 6, then, depicts the 10 codes for school web site enablers

along with their frequencies and percentages of the totals for each key personnel group investigated.

Table 6. Frequencies and Percentages for School Web Site Enablers

Enabler code	Policy Makers & Plans (n=5)	Support Staff (n=4)	Teachers (n=2)	Total
1 Teacher incentives	1/ 2%	3/ 5%	3/ 17%	7/ 5%
2 Parent education	4/ 9%	1/ 1%	0/ 0%	5/ 4%
3 Design feedback	1/ 2%	11/ 17%	2/ 11%	14/ 11%
4 Staff development	6/ 13%	6/ 9%	3/ 17%	15/ 12%
5 Budgetary allotments	8/ 17%	3/ 5%	0/ 0%	11/ 8%
6 Administrator expectation	10/ 21%	10/ 15%	4/ 22%	24/ 18%
7 Support staff	5/ 11%	9/ 14%	1/ 5%	15/ 12%
8 Equipment	3/ 6%	3/ 5%	0/ 0%	6/ 5%
9 Schoolwires (CMS)	7/ 15%	14/ 21%	3/ 17%	24/ 18%
10 WebBlender software	2/ 4%	5/ 8%	2/ 11%	9/ 7%
Total per group	47/ 100%	65/ 100%	18/ 100%	130/ 100%

The first five enablers are associated with district strategies that include (a) stipends offered to teachers who maintain the school sites; (b) parent education nights to encourage Internet use; (c) positive feedback given to teachers about their sites' postings; (d) staff development supporting web design; and, (e) an administrator's expectation encouraging school web sites. Table 7 displays some sample comments that interviewees made in these areas.

The researcher identified a sixth enabler as *support staff members* hired to facilitate and promote web design and development. The district recently hired three employees (Director of Instructional Technology, a Coordinator of Instructional Technology, and a Curriculum Resource Teacher) whose jobs include teacher training in web design, webmastering of various sites in the district, and decision making involving web site design and maintenance.

Table 7. Comments Coded as Enablers

Code	Quote
<i>Teacher incentives</i>	“In terms of web sites, there is supposed to be one person at each school in charge of the school’s web site. This year will be the first time they get a stipend.”
<i>Parent education</i>	“We had what I want to say at least seven maybe nine parent education nights. A couple of those were on technology, predominantly the dangers of the Web and MySpace and that kind of thing that’s going on because it is a concern.”
<i>Design feedback</i>	“The most rewarding part of providing this service is watching people use it.”
<i>Staff development</i>	“They are offering regular district wide opportunities for teachers to get training. They are doing specific training at the two QZAB schools. The more comfortable teachers get with it the more they will use it.”
<i>Administrative expectation</i>	“Oh absolutely, the superintendent has been instrumental in the necessity of a new web site design, that it is more community friendly, teacher friendly, and student friendly, and that it presents a more professional appearance.”

All three positions are funded by the Quality Zone Academy Bond (QZAB) project, a \$5 million loan granted to the district in 2007. The QZAB loan is included as part of the seventh enabler (*budgetary allotments*). The loan requires that a portion of the monies remain in a savings account to accrue interest while the remaining funds are used for salaries, equipment purchases, and web authoring software provided to two qualified Title I schools. The district has maintained a balance to fund technology purchases for the other seven schools not funded by QZAB, through other *budgetary allotments*.

An eighth enabler is prompted by the district’s intention for an improved web presence. It recently purchased *Schoolwires*, a web-based content management system (CMS), web host, and web design support service. A CMS facilitates an organization’s web

development by simplifying the design task and turning the focus to content updates. The Director of Instructional Technology sees *Schoolwires* as an efficient and economic way to advance the professional design of the district's web site (and those of the schools as well). The district had the option to store all its web pages on *Schoolwires* servers for an additional fee. The district elected not to use the web host; instead its sites are hosted on servers housed at the district's main office—a decision that provides more flexibility at less expense—a situation the researcher coded as the enabler *equipment* (her ninth such code).

As with the purchase of *Schoolwires*, the tenth enabler also stems from the district's efforts to establish a more comprehensive web presence. It purchased *WebBlender* for the two QZAB school sites—web authoring software designed to be easy for users with very little design experience. Its developer, Tech4learning, claims that *WebBlender* lets even the most novice designer create rich web sites with text, graphics, and sound. It is touted as an intuitive tool with a friendly interface that allows one to focus on the content rather than the technical side of web authoring.

CONSTRAINTS

In contrast to influential factors that promote and encourage web site development, constraints are the factors limiting, hindering, or preventing their progress. Well intended plans to provide engaging web design can easily be derailed due to limited budgets, insufficient time, or lack of design expertise. The researcher found six areas she determined stymie the development and maintenance of the district's school web sites. Comments regarding *time constraints* were mentioned most frequently by all three groups. The teachers' comments were coded the fewest times for all six constraint categories while the support staff's comments were coded over half of the total occurrences. Policy makers focused mostly on *budgetary and time constraints* with little concern for the *design or technical constraints*. Frequencies and percentages for the six codes associated with limiting the design and development of the schools' web sites are detailed in Table 8.

Time constraints was the code most frequently applied to participants' comments when they were asked about the types of things that prevented web site development in the

district. Responses to the question, “What types of things do you see as getting in the way of school web site development here in the district?” included:

- *Well, absolutely its time, I mean that's the first thing anyone would say 'I don't have the time.'*
- *Time, I think a lot of teachers don't have time.*
- *Every week I tried to get it all done, Monday, Tuesday, Wednesday, Thursday, Friday, but it's difficult to find the time.*
- *They [district policy makers] are telling me I need to have a web site...I've got my budget and I have everything else to do.*

Table 8. Frequencies and Percentages for School Web Site Constraints

Constraint code	Policymakers & Plans (n=5)	Support Staff (n=4)	Teachers (n=2)	Total
Time constraints	6/ 33%	5/ 17%	2/ 40%	13/ 25%
Lack of design experience	1/ 6%	8/ 27%	2/ 40%	11/ 21%
Web authoring tools	5/ 28%	3/ 11%	1/ 20%	9/ 18%
Budgetary limitations	4/ 22%	3/ 11%	0/ 0%	7/ 13%
Design concerns	2/ 11%	5/ 17%	0/ 0%	7/ 13%
Technical constraints	0/ 0%	5/ 17%	0/ 0%	5/ 10%
Total per group	18/ 100%	29/ 100%	5/ 100%	52/ 100%

All the school web sites in the district are designed and maintained by web designers with a broad range of experience. While designers with high skill levels helped to promote the district's web development, the researcher found many instances where *lack of design experience* hindered the process. For example, one support staff member stated,

Some school web sites are maintained by the secretary. Some web sites are maintained by the teacher. And you just had different levels of expertise, so was one page, welcome to our school, here's our mascot, here's what we read; and, another was 30 pages with links and stuff.

Others wished for everyone to have the same level of expertise with technology to make their jobs easier. One, however, referred to a need for simple *web authoring tools* that even novices can master (the same value, perhaps, of a content management system such as *Schoolwires*). A few interviewees specifically referred to the district's decision to move away

from FrontPage and Dreamweaver--web authoring tools that require a high level of expertise to use. Many felt such applications were useful to webmasters with more advanced skills, but inappropriate for those with limited design experience.

Budgetary limitations was a code applied by the researcher to seven phrases that participants mentioned as a hindrance. Although many knew of ways to improve the district's web presence, costs often got in the way. For example, one thought it would be a good idea to hire a designated web designer, but found it an idea that could not compete with all the other budgetary demands. She said,

That would be awesome. So that's certainly something we would love to see happen and at one point we thought it might actually happen, but, you know, it always comes down to where the dollars are going to be spent.

The interviewees used a number of interesting phrases to express their opinions regarding *budgetary limitations* including "They don't have the money"; "So it comes back to the money"; "It was too costly"; "The money is an issue"; and, "So the almighty dollar is huge."

Design concerns was a constraint that key personnel expressed seven times. The interviewees recognized that parents came to the Web with varied skills, home access, and language backgrounds; they were concerned about the district's ability to communicate with all parents via the schools' sites. They spoke about a lack of parent access to computers and/or the Internet, parents' low level skills for browsing the Internet, and their limited English proficiency. One district level administrator said: "*You have to consider that many of them [parents] don't have it at home- so we have to look at other ways to accommodate that too*".

Technical constraints such as lack of equipment, network outages, security restrictions, and server space can also stand in the way of a quality Web presence. Three interviewees, all support staff, mentioned some of the difficulties associated with bandwidth, server space, and network breakdowns. Reference was made to the security imposed on the network by the Internet Technologies (IT) Department, limiting teachers to specific tasks. She said,

It is part of what IT does... They tell teachers they can't because they're not smart enough to know how to do this... Publishing something, copying a folder to a server is not going to take down your server. They may think so, but it's not.

KNOWLEDGE OF ENGAGING WEB DESIGN ATTRIBUTES

The researcher's interview protocol (see Appendix A) was designed to target the purposes, enablers, and constraints of the district's web sites; however, she felt it was also important to understand what her interviewees "know" about engaging web site attributes. The interviewees were not directly asked questions regarding engaging design attributes, but the data were explored for phrases (49 identified altogether) which showed an implicit understanding of the five categories, i.e. *sense of control*, *intrinsically motivating*, *enjoyable*, *helps to reach a goal*, and *focused attention*. Table 9 provides the frequencies and percentages for each of these attributes.

Table 9. Key Personnel's Knowledge of Engaging Web Site Attributes

Attribute Code	Policymakers & Plans (n=5)	Support Staff (n=4)	Teachers (n=2)	Total
Sense of control	0/ 0%	1/ 3%	0/ 0%	1/ 2%
Intrinsically motivating	4/ 29%	14/ 54%	6/ 67%	24/ 49%
Enjoyable	2/ 14%	5/ 19%	1/ 11%	8/ 17%
Helps to reach goal	6/ 43%	3/ 12%	1/ 11%	10/ 20%
Focused attention	2/ 14%	3/ 12%	1/ 11%	6/ 12%
Total per group	14/ 100%	26/ 100%	9/ 100%	49/ 100%

The one occurrence associated with *sense of control* was a participant's mention of site navigation. Most of the 24/ 49% occurrences associated with *intrinsically motivating* were about the display of student work and updates to site's material. The participants talked about such *enjoyable* attributes as pleasant font and background colors, enhancing pictures, and consistent use of banners. They spoke of the purpose of the site, student homework assignments, and contact information—elements ultimately coded under the category of *helps to reach goal*. The *focused attention* category was represented by comments related to test scores, calendar of events, and external links for both students and parents. Table 10 lists a sampling of quotes depicting the participants' knowledge of engaging web site attributes.

Table 10. Key Personnel's Knowledge of Engaging Web Site Attributes Quotes

Attribute Category	Quote
<i>Sense of control</i>	"You can't see it, so how is everybody going to find the information? I have to have clear navigation."
<i>Intrinsically motivating</i>	"Yeah, they don't necessarily have to update it everyday or every week, but it has to be current."
<i>Enjoyable</i>	"So we got a lot of praise for that. Parents loved the pictures."
<i>Helps to reach goal</i>	"I put my purposes directly on the web site."
<i>Focused attention</i>	"We are going to enforce the fact that every school's parent handbook will be there."

FINDINGS RQ2: PARENT FEEDBACK

This section describes results of data gathered to address the question posed by RQ2: *In what ways and how well do the district's school web sites engage the parents as a specific target audience?* Findings are drawn from the parent surveys and the parent focus group interviews³, and are presented in the following order: (a) respondent demography (survey); (b) analysis of the 12 areas of interests around which the survey was organized; and, (c) analyses of parent focus group interviews.

Demographic Data Results

The first six questions listed on the School Web Site Parent Survey (see Appendix B) were designed to gather characterizing information about parents whose children attend the four selected schools.

³ Interviewees were drawn from the survey respondents. A closing section of the survey called for those interested in participating to provide contact information. Of the 62 who did, 10 ultimately attended one of the three meetings the researcher organized.

SURVEY RETURN RATE

Four of the nine district school sites were part of the stratified random sample as discussed previously in Chapter 3. The researcher prepared “take home” surveys (n=570) that she delivered to a contact person at each site; that person provided them to the 2nd and 5th grade teachers who were ultimately responsible for distributing them to students (for “take home to parents). The return rate ranged from a low of 28/28% (School 3) to a high of 77/42% (School 2); the average return rate then was 50/35%. The return rate for both grade levels was within two percentage points—80/36% (2nd grade) and 110/34% (5th grade). Table 11 summarizes the distribution strategy.

Table 11. Parent Surveys Provided and Returned by Parents

Name of School	Provided 2 nd	Provided 5 th	Gave Total	Returned by 2 nd	Returned by 5 th	Returned Total	Return rate
School 1	63	102	165	23	25	48	29%
School 2	82	101	183	30	47	77	42%
School 3	42	57	99	12	16	28	28%
School 4	63	60	123	24	22	46	37%
Total	250	320	570	89	110	199	35%

PARENTS' AGE RANGE

The 199 survey respondents were asked to indicate their age range; 177 responded, a response rate of 89%. The majority chose 31-35 (48/27%); not surprisingly, the three ranges spanning 31-45 years old represented over 75% of those responding (n=132). Figure 1 depicts the distribution in its entirety.

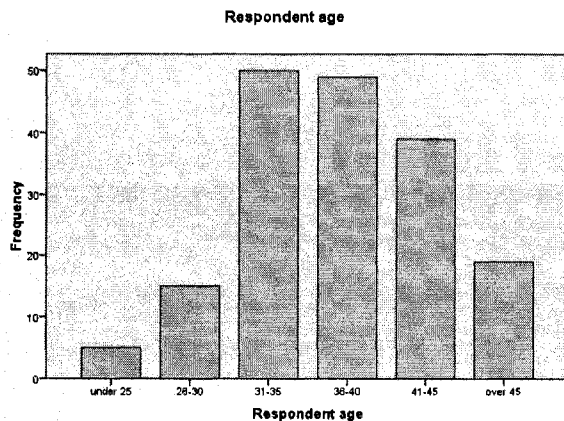


Figure 1. Frequencies of respondent's age range.

NUMBER OF SCHOOL AGED CHILDREN

Parents were asked to indicate the total number of school-age children; the total—403—is distributed as follows: 125 from grades K-2, 155 from grades 3-5, 69 from grades

6-8, and 54 from grades 9-12. Eight parent respondents indicated having two or more children in the sampled grades (six had siblings from both second and fifth grade, one parent had twins and another had triplets--all in the same grade). [The researcher counted the duplicate surveys as one response in order to avoid a misrepresentation of the data.] Figure 2 offers a visual representation of the data

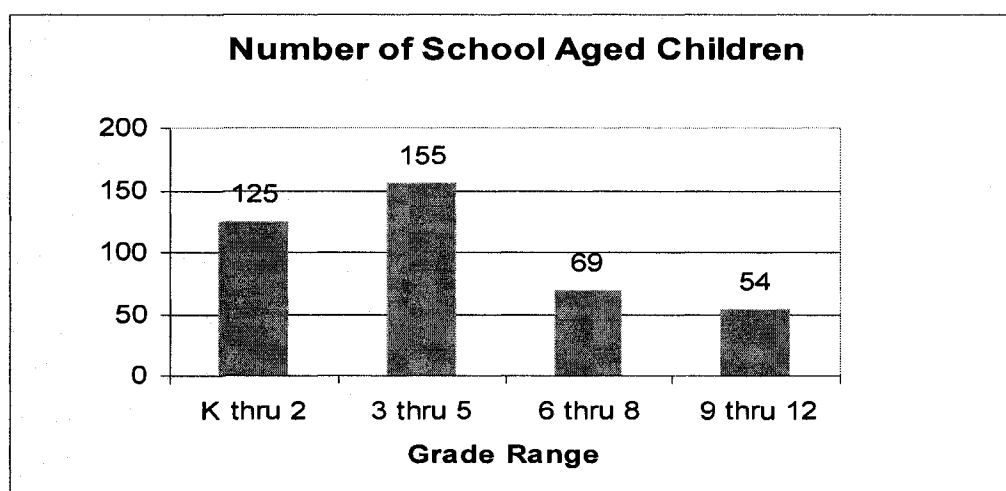


Figure 2. Number of school aged children revealed by parent survey data.

ASPECTS OF PARENT'S INTERNET USAGE

Three survey questions explored various aspects of parents' Internet "use": home access, type of access, and extent of use. The results suggest that access is widespread; fully 97% of responding parents reported some type of Internet access—with most of it broadband quality: 159/83% cable, 21/11% DSL, 10/5% dial-up, and 2/1% cell phone. The majority of the parents (167/85%) perceived themselves as extensive or routine users, while a smaller number (30/15%) saw themselves as occasional or limited users. Most 173/89% of survey respondents reported accessing their child's school web site [at least once].

REASONS FOR INTERNET USAGE

Parents were asked to indicate their top three reasons for “using” the Internet. The top choice of 174 survey respondents was *email* (94/54%)—followed by *job related* (50/29%), and *entertainment* (10/6%). Internet usage takes on a fuller picture, however, when the analysis attends to whether or not a “reason” was selected as first, second, or third choice—although *chat/blog*, *sports*, and *health* were selected by fewer than 5% of the respondents overall. The researcher added the category *other* in order to accommodate the six respondents who wrote in *banking* as either a first, second, or third reason for Internet usage. Table 12 lists the frequencies and the percentages for the respondent’s top three choices for Internet usage while Figure 3 offers a visual presentation of the data.

Data Analyses of Parent Interests

The bulk of the survey targeted the parents’ level of interest (*high, somewhat, little*) in 12 content areas found commonly on school web sites:

- Grade level academic standards
- Student homework assignments
- Principal’s newsletter
- Display of students’ work
- Teacher background information
- School report card
- School/staff contact information
- Calendar of events
- Parent involvement opportunities
- Lunch menu
- Links to educational resources
- Classroom rules

The following subsections detail the various analyses performed for these items—both descriptive and (where appropriate) inferential.

Table 12. Frequencies and Percentages for Top Three Reasons of Internet Usage

Reason for Internet Usage	Frequency 1st Choice	% 1 st Choice	Frequency 2 nd Choice	% 2 nd Choice	Frequency 3rd Choice	% 3 rd Choice
email	94	54%	57	33%	13	8%
job related	50	29%	28	16%	7	4%
entertainment	10	6%	21	12%	35	21%
education	9	5%	33	19%	33	19%
purchasing	3	2%	9	5%	39	23%
other	3	2%	1	1%	2	1%
health	2	1%	0	0%	1	1%
news	1	1%	19	11%	29	17%
chat/blog	1	1%	3	2%	6	4%
sports	1	1%	2	1%	5	3%
total responses	174		173		170	
missing data	25		26		29	

Top Three Choices for Internet Usage

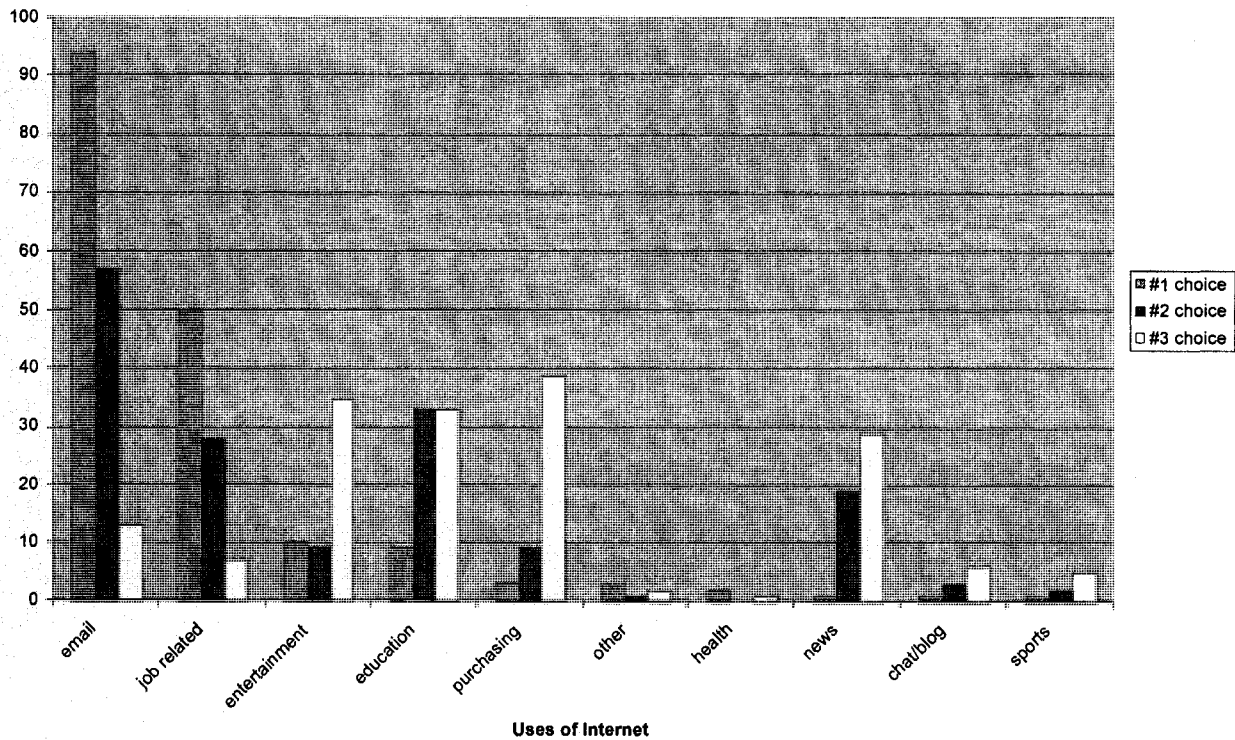


Figure 3. Frequencies for parents' top three reasons for Internet usage.

FREQUENCIES FOR 12 PARENT INTERESTS

The researcher first calculated frequencies for each of the 12 interest areas. The parents' choices for *high interest* ranged from 59/30% (*lunch menu*) to 149/76% (*calendar of events*). The frequencies for *some interests* ranged from 41/21% (*calendar of events*) to 93/47% (*classroom rules*). *Little interest* was selected by parent survey respondents ranging from 5/3% (*calendar of events*) to 56/29% (*lunch menu*). *High interest* was chosen most frequently in 8 of the 12 content areas. *Some interest* was chosen most frequently in four of the content areas and *little interest* was the least frequently chosen by respondents in all 12 areas. The greatest range difference among the three interest choices was 145 for *calendar of events* and the shortest range difference was 25 for *lunch menu*. The data suggest that *calendar of events*, *student homework assignments*, and *school/staff contact information* were the three areas in which parents were most interested. *Lunch menu*, *principal's newsletter*, and *classroom rules* were the three areas of least interest. Table 13 lists the 12 school web site content areas and displays the frequencies and the percentages of the parents' responses for all 12 levels of interest.

Table 13. Frequencies and Percentages of the Parents' Interests

School Web Site Content Areas	High Interest (1)	Some Interest (2)	Little Interest (3)
Calendar of events	149/ 76%	41/ 21%	5/ 3%
Student homework assignments	143/ 73%	46/ 24%	6/ 3%
School/staff contact information	140/ 71%	50/ 26%	6/ 3%
School report cards	124/ 63%	54/ 28%	18/ 9%
Links to educational resources	115/ 59%	63/ 32%	18/ 9%
Display of students' work	107/ 55%	70/ 36%	19/ 9%
Grade level academic standards	97/ 50%	78/ 40%	20/ 10%
Teacher background information	94/ 48%	85/ 43%	17/ 9%
Parent opportunities	87/ 45%	89/ 45%	20/ 10%
Classroom rules	77/ 40%	93/ 47%	26/ 13%
Principal's newsletter	63/ 32%	93/ 48%	39/ 20%
Lunch menu	59/ 30%	81/ 41%	56/ 29%

PARENT INTERESTS AND SCHOOL DEMOGRAPHY

The next step was to determine whether parent interests differed by school status (Title 1/non-Title 1) or size (enrollment greater or less than 500). Given the analytical

limitations of 3-point scale, the researcher opted for the chi-square—which focuses on differences in distributions rather than group means. None of the findings for the chi square test was found to be significant ($p < .05$) for either variable tested. Table 14 depicts the 12 parent interests and the resulting p values for both demographic variables.

SCHOOLS AND WEB SITE PURPOSE

Finally, the researcher felt it was important to examine the data as it related to the four purposes for the schools' web sites. In order to explore the data in this way, the researcher recoded the 12 areas of interests into one of four purposes, i.e., (1) *to communicate*, (2) *to inform*, (3) *to market*, and (4) *to showcase*. The 12 areas of interests were grouped as follows:

Table 14. Chi -Square Results for the 12 School Web Site Content Areas

Parent Interests	Title I Status p value	Enrollment Greater than 500 p value
Lunch menu	.056	.082
School report cards	.101	.096
Links to educational resources	.181	.651
School/staff contact information	.285	.227
Calendar of events	.413	.525
Grade level academic standards	.465	.393
Display of students' work	.554	.508
Teacher background information	.574	.190
Student homework assignments	.735	.240
Parent opportunities	.736	.563
Classroom rules	.802	.611
Principal's newsletter	.807	.633

- *Interest items to communicate = calendar of events + school/staff contact information + lunch menu + student homework assignment*
- *Interest items to inform = classroom rules + links to outside resources + academic standards*
- *Interest items to market = teacher background information + principal's newsletter + parent opportunities*
- *Interest items to showcase = display of students' work + school report card*

With the items reorganized, she first calculated the mean for each item, and then for the entire “group” or purpose with which it was affiliated. The means for the grouped parent interests ranged from

- 1.36 (School 4) to 1.66 (School 1) for the purpose *to communicate*.
- 1.57 (Schools 2 & 4) to 1.73 (School 1) for the purpose *to inform*.
- 1.61 (School 4) to 1.77 (School 1) for the purpose *to market*.
- 1.40 (School 2) to 1.60 (School 4) for the purpose *to showcase*.

Remembering that the lower mean values indicate higher interest (*high interest*=1; *some interest*=2; *little interest*=3), the data suggest that on average the parents expressed from *some interest* to *high interest* in all four purpose groups. Table 15 displays the means for the grouped parent interest items for each of the four schools.

Table 15. Means of Interests Items/Purpose by School

Interest items/purpose	School 1 Mean	School 2 Mean	School 3 Mean	School 4 Mean
To communicate	1.66	1.45	1.45	1.36
To inform	1.73	1.57	1.64	1.57
To market	1.77	1.72	1.75	1.61
To showcase	1.57	1.40	1.53	1.60

The researcher then performed a one way analysis of variance (ANOVA) for each purpose to determine if parent interests differed by school. The test was performed for each of the four recoded variables using *school* as the dependent variable to determine if there were any significant differences among the schools sampled. The results of the ANOVA indicated a significant difference ($p < .05$) for only one of the four purpose variables (*interest items/ to communicate* ($p = .022$)). A TUKEY post hoc test ($p = .011$) revealed that the difference for *interest items/ to communicate* lie between School 1 and School 4. Both schools have enrollments less than 500 however School 1 is Title I while School 4 is not. Table 16 lists the means for each of the four purpose variables, the results of the ANOVA, and the significant results of the TUKEY post hoc.

Table 16. Means for Interest Items Grouped by Web Site Purpose

Interest items/purpose	Total Mean	ANOVA p value	TUKEY Post Hoc p value
To communicate	1.46	.022*	School 1 and School 4 .011*
To inform	1.61	.468	
To market	1.71	.556	
To showcase	1.50	.142	

ADDITIONAL PARENT INTERESTS

Parents were invited to include any other areas of interests not listed on the survey; unfortunately, only 14 of the 60 comments were truly different. Among them *categorically* were these: *interactive opportunities*, *online payment options*, and *health/safety concerns*. Table 17 offers some example remarks associated with each of the unique interest areas.

Table 17. Additional Parent Interests

Parent Interests	Comment
Interactive opportunities	<i>"Discussion board for parents."</i>
Interactive opportunities	<i>"A kid's homework chat room- where kids can logon to ask other students for help."</i>
Interactive opportunities	<i>"Classroom blogs"</i>
Online payment options	<i>"Order and pay for things online such as school lunches, PTA items (shirts, etc.) fieldtrips, library fines, etc."</i>
Online payment options	<i>"It would be extra nice to sign-up and pay online"</i>
Student safety information	<i>"Current news update if there was a lock down at school, threat or a disaster. A place where parents could get info minute by minute of the situation. P.S. this has happened at the school (a threat) and there was no way to check the safety status of the situation."</i>
Student safety information	<i>"Safety plans for emergency situations (fire, bomb threats, violence including weapons)"</i>
Student health information	<i>"School nurse page with communicable diseases what's going around, tips, etc"</i>

Data Analyses of Parent Focus Groups

The last section of the parent survey invited parents to participate further in the study by joining one of several discussion groups to be held off campus at a local coffee shop. Sixty-two parents expressed an interest in participating, and all were contacted either by

phone or email. Ultimately, 18 parents agreed to attend—but only 10 parents actually showed for the discussion.

Data gathered from the parent survey helped the researcher create a semi-structured protocol (see Appendix A) that guided the parent discussions. Topics or themes included: parents' frequency of and reasons for Internet usage; feedback regarding the currency and accuracy of their children's web sites; opinions about interactive opportunities, online payment options, and school safety information. Each of the three interviews lasted about 45 minutes; was audiotaped and transcribed.

Analytically, the researcher examined the transcripts for views/perspectives related to the five engaging areas of school web site design (*sense of control, intrinsically motivating, enjoyable, helps to reach goal, and focused attention*). She identified 17 themes or codes that were then applied to 157 occurrences using HyperResearch. The findings that follow suggest that 58/37% of the coded comments lie in the area of *intrinsically motivating* web site attributes. Closely behind were the comments coded 56/37% for *helps to reach goal*. Comments associated with *focused attention* (11/7%) and *enjoyable* (10/6%) were coded much less frequently. Table 18 summarizes the code frequencies and the percentages revealed by the researcher's analysis of the parent discussion group data.

PARENTS' INTERESTS: A SENSE OF CONTROL

During the course of the discussion several parents talked about the navigability of their child's school web site (22/ 14% the occurrences altogether). The views were quite mixed, varying from relatively easy (3 mentions) to difficult (19 mentions—clearly the dominant position). Parents were bothered that they couldn't find things, described "getting lost" while looking for information, or misunderstood the web designer's labels. Two parents suggested the need for a search function and one couldn't find the lunch menu (despite a link being provided on all nine school sites). Table 19 presents some salient "across the spectrum" remarks regarding the sites' *ease of navigation*.

Table 18. Frequencies and Percentages of Codes for Parent Focus Groups

Code Description	Participants Th 10-11 n=4	Participants Th 5-6 n=2	Participants Fri 6-7 n=4	Participants Total n=10
Ease Of Navigation (SC)	13/ 20%	2/ 6%	7/ 13%	22/ 14.0%
Customization (IM)	7/ 11%	3/ 8%	6/ 11%	16/ 10.0%
Calendar (IM)	4/ 6%	2/ 5%	5/ 9%	11/ 7.0%
Currency (IM)	5/ 7%	3/ 8%	5/ 9%	13/ 8.0%
School Activities (IM)	3/ 4%	3/ 8%	0/ 0%	6/ 4.0%
Child's Work (IM)	1/ 2%	1/ 3%	3/ 6%	5/ 3.0%
Lunch Menu (IM)	3/ 4%	0/ 0%	1/ 2%	4/ 2.0%
School Report Card (IM)	0/ 0%	2/ 6%	0/ 0%	2/ 1.5%
Accuracy (IM)	0/ 0%	1/ 3%	0/ 0%	1/ 0.5%
Site's Appearance (E)	2/ 3%	4/ 11%	2/ 4%	8/ 5.0%
Site's Images (E)	1/ 2%	1/ 3%	0/ 0%	2/ 1.5%
Interactive Options (HRG)	6/ 9%	6/ 16%	5/ 9%	17/ 11.0%
Goals Achieved (HRG)	9/ 14%	4/ 11%	4/ 7%	17/ 11.0%
Web Site Promotion (HRG)	5/ 7%	2/ 5%	5/ 9%	12/ 8.0%
Contact Information (HRG)	3/ 4%	0/ 0%	7/ 13%	10/ 6.0%
Frequency of Use (FA)	3/ 4%	2/ 5%	3/ 6%	8/ 5.0%
Links to Resources (FA)	2/ 3%	0/ 0%	1/ 2%	3/ 2.5%
Total Per Group	66/ 100%	37/ 100%	54/ 100%	157/ 100%

Table 19. Parents Comments Regarding Ease of Navigation

"It's not that user friendly when you're trying to figure it out."
"I have struggled when I try to find information on there."
"When I was trying to find the lunch menu, I wouldn't have thought to go to business."
"It's the naming that makes sense to them but it doesn't make sense to parents looking for it, no matter what your level of comfort is using a web site searching for things."
"It gets frustrating when you hit dead ends. Like at the district site, I've looked for transportation -- even when I look for a phone number and they don't have a phone number. They have all this information but there's no phone number to call transportation."
"It was pretty clear that they had it broken down by categories. Right at the beginning, it told you the name and the address of the school and gave you all the information and a picture and then it broke down into categories so you knew exactly what you were looking for."
"I think its well organized and I like how they have the "select a school" at the top and I like how its got the unified organization for the whole district and then you can go to the individual schools in that and the tabs are clear and easy to see."

PARENT INTERESTS: INTRINSICALLY MOTIVATING

The researcher asked about the information parents typically look for on their children's school web sites. Among the areas interviewees mentioned/discussed interests were a school calendar (11/ 7%), their child's work (5/ 3%), a lunch menu (4/ 2%), school

activities (6/ 4%), and a school report card (2/ 1.5%). Parents seemed confused when asked about the accuracy (1/ .5%) of the sites. One parent responded with a simple “yes”—but many others shrugged their shoulders or simply did not comment. However, parents eagerly shared their (varied) feelings when asked about the currency (13/ 8%) of the schools’ web sites. Three parents found the information on the sites to be current, but complained about how infrequently the sites are updated—especially at the beginning of the school year.

Following are three of the participants’ most salient remarks:

- *The web site that I saw this morning, the calendar had stuff on it that I had given to the secretary two days ago. So it’s very up to date.*
- *Things I’ve gone on for is a schedule which is never up to date and very hard to find.*
- *And I find that usually at the beginning of the school year, that’s when the web sites are old and it takes them a good month or so to get going. Well, you know, that doesn’t help parents.*

The parents offered several ideas (16/ 10% comments) when asked about their interests and concerns regarding customization features. Many (5) welcomed the idea, for example, of online payment options (for fieldtrips, lunches, fundraisers, etc.). One person didn’t find the idea personally appealing—but thought younger parents might. Some parents (3) expressed concern about security and thought an online payment service such as Paypal (see www.paypal.com) might be a good solution.

- *I don’t do any online banking and all that stuff. My kids think I’m like ancient. I just feel that way because I don’t feel comfortable doing it, but I think the younger generation are so used to doing so much online, it probably would work from what I hear.*
- *If you could pay that stuff through Paypal and that -- for the ones that already have it. Yeah, that would be very nice. Paypal’s awesome. And that doesn’t have a fee.*

Parents also mentioned passwords given to them by the district in order to access their child’s grades and attendance records online. They clearly didn’t understand the security measures “built” into their assignment, complaining about their complexity, not being able to modify them, or having no one to turn to if forgotten.

But, last year, they gave us student specific passwords so that we could go in and access our student’s information like report cards or their assignments. I don’t

know if they're doing that anymore. It was a pain trying to remember the password.

They don't let you go in and choose your own user name and your user password. They assign it to you. You cannot change it. You cannot edit it.

PARENT INTERESTS: ENJOYABLE

Using her own laptop computer, the researcher displayed two of the school sites relevant to the parents in attendance. She asked the parents to rate the overall appearance. Parents were generally upbeat. They commented about the *sites' images* (2/ 1.5%) and their *appearance* (8/ 5%). Several liked the new look that the CMS offered. They also spoke positively about the consistency: they felt it was a good beginning and a welcomed change. Two parents were favorably impressed with the images—pointing specifically to the mascot logo and the pictures of student activities. There was, however, some confusion about the school lunch menu which appeared sideways on the monitor. Parents did not understand the file's format (pdf) commonly printed out rather than viewed on a computer screen. A brief discussion ensued on how to turn the menu's image upright. Parents did comparisons of their child's school site with other sites in the district. One said, "*Ours is not as fancy,*" while another said, "*I think yours is better than ours.*" Two parents felt the sites were either "*cluttered*" or "*bland*".

PARENT INTERESTS: HELPS TO REACH GOAL

The researcher asked the parents about various ways the sites help them reach an intended goal and in the course of the discussion, they make 56/ 36% specific comments in this area. One parent had used the schools' sites to investigate the district and select a school for her child. Another had looked online for details of a homework project—and was pleased she could find the information late at night. Several parents were not as "successful," however. They noted problems finding the school calendar, the lunch menu, links to other schools, PTA information, and phone numbers. Parents, in fact, seemed especially frustrated when they could not find *contact information* (10/ 6%). Important to note is that many of these aforementioned features are available on the sites; parents simply could not find them.

The researcher asked the parents to provide feedback on one of the additional interests voiced on the parent survey associated with using *interactive features* (17/ 11%) such as discussion boards, blogs, and email. The opinions were mixed with no real uniformity regarding the use of discussion boards and blogs; some favored web sites as a good place to post information anonymously; others felt it was not a place for disgruntled parents to vent their displeasures. One interviewee mentioned that a discussion board would be a good opportunity for working parents to become a part of the school community. Another said he had participated in a discussion board at his child's school, but that it was not very active and had very few postings. The feature that most interested parents (and about which they spoke most favorably) was email. They felt it was an option that could streamline communication with the school. Specifically, they felt it connected them with their children's teachers and could be a viable method for reporting absences to the office. One parent specifically mentioned its cost-effectiveness—pointing to the expenses incurred when staff sent flyers (about an array of issues) home with students.

The researcher asked the parents if the teachers and administration promoted the use of the school site—a question that generated 12/ 8% comments. Several explained that information about web sites was featured in the school handbook and in parent newsletters. Those (3) with children whose teachers had class sites noted that children were encouraged to go online and check homework assignments. But clearly, this situation isn't universal; some parents (2) wished they had more information and one said the sites were not promoted at all.

PARENT INTERESTS: FOCUSED ATTENTION

Parents were asked about their *frequency of use—how often they* visited their child's school web site—a question that generated 8 comments. While all participating parents have visited their child's site at least once—routine visits were *not* the norm. Only one parent mentioned visiting the site daily; more common “choices” were twice a week (2), once a month (3), or 4-5 times per year (4). Frequency, of course, was a function of intent or reason, for example, to view their child's homework assignments or note current school activities. Parents also mentioned they looked for and explored *links to other educational resources* (3/ 2.5%). They looked for books on the Scholastic site and gathered information about

Accelerated Reader (a reading program used in their children’s classrooms (see www.renlearn.com)).

FINDINGS RQ3: WEB SITES’ ENGAGING ATTRIBUTES

The section that follows describes outcomes of the data gathered to address the question posed by RQ3: *To what extent does the design of the district’s school web sites contain attributes that attend to the engagement of the end user?* The researcher used a rubric, created to measure 20 engaging web site design attributes, to score each of the nine school web sites. Scoring was organized around a five-point ordinal scale that ranged from *exemplary* (5) to *lacking* (1). For each score, she also recorded comments that explained her choice. Results of this process are structured around the five areas of engagement noted throughout this chapter: *a sense of control, intrinsically motivating, enjoyable, helps to reach goal, and focused attention.*

Rubric Results: Sense of Control

The first area of engagement examined was a *sense of control*—which features three associated elements: *download time, index/ site map, and search function.*

Download time: The download time was scored as *adequate* in 8 of the 9 sites. The sites loaded smoothly and appeared within a *reasonable* amount of time. School 3 scored a *good* for *download time* because the site had multiple images which loaded smoothly and did not interfere with the user when moving from page to page.

Index/site map: The *index/site map* was *adequate* for 7 of the 9 sites. School 3 scored a *good* because there were links back to the school homepage from some of the teacher sites. School 2 was scored *inadequate* for two links to pages with no content.

Search function: All nine sites earned “0” for *search function*—since it was not featured at all.

Active links: The researcher found broken links, unclear labels, and confusing icons on 6 of the 9 sites.

Altogether, then, the total scores for *sense of control* ranged from 7/35% (School 2) to 11/55% (School 4). The mean of the four attributes associated with *sense of control* ranged from 1.75 (Schools 2&4) to 2.75 (School 3). Only School 3's web site was rated as *good* in two of the four design attributes. Most scores were *adequate* (18/50%) or *inadequate* (6/17%). Table 20 displays the scoring for the attributes associated with a *sense of control*, the total score, the mean for the four attributes, and the percentage of the total possible score (20) received by each school.

Table 20. Engaging Web Site Design Rubric Results for Sense of Control

	Download time	Index/ Sitemap	Search Function	Active Links	Total SC	Mean SC	% SC
School 1	adequate	adequate	not found	inadequate	8	2.00	40%
School 2	adequate	inadequate	not found	inadequate	7	1.75	35%
School 3	good	good	not found	adequate	11	2.75	55%
School 4	adequate	adequate	not found	lacking	7	1.75	35%
School 5	adequate	adequate	not found	inadequate	8	2.00	40%
School 6	adequate	adequate	not found	inadequate	8	2.00	40%
School 7	adequate	adequate	not found	inadequate	8	2.00	40%
School 8	adequate	adequate	not found	adequate	9	2.25	45%
School 9	adequate	adequate	not found	adequate	9	2.25	45%

Rubric Results: Intrinsically Motivating

The next area of engagement rated by the researcher was associated with *intrinsically motivating* content. The six attributes scored were *scope*, *depth*, *currency*, *authority*, *accuracy*, and *customization*.

Scope: School 3 received a *good* rating for *scope*. The site featured several classroom pages across the grade levels, in addition, there was an extensive page posted by the PTA. Three schools received an *adequate* rating for *scope* with several classroom pages representing all the grade levels. The three schools receiving an *inadequate* for *scope* had fewer classroom pages and these pages represented only some of the grade levels. Two schools were found *lacking* for *scope* with no classroom sites posted.

Depth: Two schools were rated *good* for *depth*, four were found to be *inadequate*, and two *lacking*. The researcher rated the *depth* of the sites higher because they offered links to classroom pages, staff information across the grade levels, and archived newsletters. The *inadequate* sites offered fewer options to the user, but did have some basic features, such as calendars, principal newsletter, and classroom web pages. The sites found to be *lacking* had minimal content and presented only a few options beyond the sites' homepages.

Currency: Six of the sites were found to be adequate for *currency*. The sites appeared to have been updated within the past few weeks. None of the school sites contained a posting for the latest update, yet three teachers did provide the information on their classroom pages. Two sites were found to be *inadequate* with images of students from previous academic years, out of date handbooks, and a recently transferred principal's name. The one *lacking* site for *currency* was difficult to evaluate since it had so little content.

Authority: The researcher determined that sites ranged from *adequate* to *lacking* for *authority*. She was not able to find any acknowledgements for the sources of the information, yet the authorship appeared to be credible in most cases. The one *lacking* site for *authority* was difficult to evaluate since it had so little content.

Accuracy: The accuracy of the sites ranged from *good* to *lacking*. The *accuracy* for School 3 was rated *good* because the content was consistent with other district sources. Some of the sites contained out dated calendars, old versions of the parent handbook, and principal newsletters incorrectly labeled. School 2 had so little content it was difficult to evaluate.

Customization: The researcher could not find any features of customization in eight of the nine school sites. One school site was seen as *lacking* since it had one link which provided parents the opportunity to purchase books online.

The scores for *intrinsically motivating* ranged from 5(17%) to 17(57%). The mean score for the six attributes associated with this area of engagement ranged from 0.83 (School 2) to 2.83 (School 3). School 3 was the only site to receive a good rating in three of the six attributes. Most of the sites' attributes were scored as *adequate* (18/33%) or *inadequate* (16/30%). Table 21 displays the scoring for the attributes associated with *intrinsically motivating*: the total score, the mean of the six attributes, and the percentage of the total possible score (30) received by each school.

Rubric Results: Enjoyable

The third area of engagement rated by the researcher was associated with design attributes that promote an *enjoyable* experience for the user. The four attributes assessed were *images*, *font*, *layout*, and *homepage*.

Images: The researcher rated only one school site as *adequate* for *images*. The images on School 3's site complimented the site's design however the number of photos on the staff page was overwhelming. Eight of the nine sites were scored as either *inadequate* or *lacking*. These sites had *images* that were either missing, too cluttered on pages, distorted or grainy. One classroom page was filled with animated gifs that wildly blinked and moved throughout the design.

Font: The *font* was found to be *good* or *adequate* for seven of the sites. The *font* styles were consistent from page to page. Two sites were found to be *inadequate* because they displayed unusual font styles and used different text alignments from one page to the next.

Layout: Four sites proved to be *adequate* for *layout*. The designs incorporated a nice balance between content and white-space, were consistent from page to page, and had pages which did not require excessive scrolling. The other five sites had problems with a proper text to image ratio, designs which were either too sparse or too cluttered, and pages that required too much scrolling.

Table 21. Engaging Web Site Design Rubric Results for Intrinsically Motivating

	Scope	Depth	Currency	Authority	Accuracy	Customization	Total IM	Mean IM	% IM
School 1	adequate	good	adequate	adequate	adequate	not found	16	2.66	53%
School 2	lacking	lacking	lacking	lacking	lacking	not found	5	0.83	16%
School 3	good	good	adequate	adequate	good	not found	17	2.83	56%
School 4	inadequate	inadequate	adequate	inadequate	inadequate	not found	11	1.83	36%
School 5	inadequate	inadequate	inadequate	inadequate	adequate	lacking	12	2.00	40%
School 6	inadequate	inadequate	adequate	adequate	adequate	not found	13	2.16	43%
School 7	lacking	lacking	inadequate	inadequate	inadequate	not found	8	1.33	26%
School 8	adequate	inadequate	adequate	inadequate	adequate	not found	13	2.16	43%
School 9	adequate	inadequate	adequate	adequate	adequate	not found	14	2.33	46%

Homepage: Six of the *homepages* were scored at *good* or *adequate*. The *homepages* had a consistent look from school to school and were nicely organized. The three schools with *inadequate homepages* had little content and minimal use of imagery.

The total scores for *enjoyable* ranged from 6/17% (School 2) to 13/36% (School 3). The mean of the four attributes associated with *enjoyable* ranged from 1.50 (School 2) to 3.25 (School 3). Only two schools (Schools 3&5) received a *good* rating for two separate attributes (*font* and *homepage*). Most attributes were scored as either *adequate* (16/44%) or *inadequate* (14/39%). Table 22 displays the scoring for the attributes associated with *enjoyable* the total score, the mean for the four attributes, and the percentage of the total possible score (20) received by each school.

Table 22. Engaging Web Site Design Rubric Results for Enjoyable

	Images	Font	Layout	Homepage	Total E	Mean E	% E
School 1	inadequate	inadequate	inadequate	inadequate	8	2.00	40%
School 2	lacking	inadequate	lacking	inadequate	6	1.50	30%
School 3	adequate	good	adequate	adequate	13	3.25	65%
School 4	lacking	adequate	inadequate	adequate	9	2.25	45%
School 5	inadequate	adequate	adequate	good	12	3.00	60%
School 6	inadequate	adequate	inadequate	adequate	10	2.50	50%
School 7	lacking	adequate	inadequate	inadequate	8	2.00	40%
School 8	inadequate	adequate	adequate	adequate	11	2.75	55%
School 9	inadequate	adequate	adequate	adequate	11	2.75	55%

Rubric Results: Helps to Reach Goal

The researcher gave some of the lowest scores to the sites for the three attributes listed under *helps to reach goal* (*FAQ's*, *contact information*, *purpose*). The attribute for *frequently asked questions* was not found on any of the nine sites and *purpose* was found only indirectly stated in all but one site.

Frequently Asked Questions: *FAQ's* was not a feature found on the homepage or on any layer of the nine schools' web sites.

Contact information: The scores for *contact information* ranged from *good* to *lacking*. The higher scoring sites offered contact information including staff information, directions to the school, school address, and phone numbers with area codes. One school site had a FAX number posted and three sites gave contact information for the webmaster. Sites scored as *inadequate* or *lacking* for *contact information* had some of the same features, but they were missing parts and the extent of the information was not as comprehensive.

Purpose: All but one site was scored as *lacking* or *inadequate* for *purpose*. The purpose of the sites could not be easily located; several sites had the *purpose* embedded in the principal's newsletter or mentioned in a mission statement. School 9 provided a link in the drop down menu for its mission statement.

The total scores for *helps to reach goal* ranged from 2/13% (School 2) to 7/47% (Schools 3 and 9). The mean of the three attributes associated with this engaging design category ranged from 0.66 (School 2) to 1.77 (Schools 3 and 9). Three of the schools' sites were rated *good* for *contact information*. The attribute coded as *frequently asked questions* could not be found on any of the nine sites. Most scores for the remaining two attributes were scored as *inadequate* (8/44%). Table 23 displays the scoring for the attributes associated with *helps to reach goal* the total score, the mean for the three attributes, and the percentage of the total possible score (15) received by each school.

Table 23. Engaging Web Site Design Rubric Results for Helps to Reach Goal

	FAQ's	Contact Information	Purpose	Total HRG	Mean HRG	% HRG
School 1	not found	adequate	inadequate	5	1.66	33%
School 2	not found	inadequate	lacking	3	1.00	20%
School 3	not found	good	adequate	7	1.75	46%
School 4	not found	inadequate	inadequate	4	1.33	26%
School 5	not found	inadequate	inadequate	4	1.33	26%
School 6	not found	inadequate	inadequate	4	1.33	26%
School 7	not found	lacking	lacking	2	0.66	13%
School 8	not found	good	lacking	5	1.66	33%
School 9	not found	good	adequate	7	1.75	46%

Rubric Results: Focused Attention

Three attributes were examined in the engaging area of focused attention (*links to outside resources, data available, and background information*).

Links to outside resources: The nine school sites were scored from *good* to *lacking* for *links to outside resource*. The two schools received a *good* rating because they listed several links (10-15) to outside resources on their school's pages as well as links on many of their teachers' pages. The other seven schools provided links to other resources to a lesser extent varying from some (5-10) to none.

Data available: The sites were rated for *data available* based on the extent of information provided for school activities, grades, school report card, and classroom projects. Less than half of the school sites were scored as *adequate* or *good* for *data available*. Most of the sites had limited *data available* providing a lunch menu and calendar.

Background information: All nine sites were found to be *inadequate* or lacking for *background information*. The researcher could not find *background information* for any staff members on any of the schools' sites, however some background information was found on a few of the teachers' pages.

The total scores for *focused attention* ranged from 3/20% (School 7) to 10/67% (School 3). The mean of the three attributes associated with this engaging design category ranged from 1.00 (School 7) to 3.33 (School 3). Only three attributes were rated as *good*—two were from the same site (School 3). Most attributes were scored as *inadequate* (10/37%) and lacking (9/33%). Table 24 displays the scoring for the attributes associated with *focused attention* the total score, the mean for the three attributes, and the percentage of the total possible score (15) received by each school.

Summary of Web Site Rubric Ratings

The sites' twenty attributes were given a *good* rating in only 8% of the 180 scoring opportunities. Most of the attributes were rated at either *adequate* (33%) or *inadequate* (29%). Fifteen percent of the scores were *lacking* and another 15% were features that were

Table 24. Engaging Web Site Design Rubric Results for Focused Attention

	Links outside	Data Available	Background Information	Total FA	Mean FA	% FA
School 1	adequate	adequate	inadequate	8	2.67	53%
School 2	inadequate	lacking	lacking	4	1.33	27%
School 3	good	good	inadequate	10	3.33	67%
School 4	lacking	inadequate	lacking	4	1.33	27%
School 5	inadequate	inadequate	lacking	5	1.67	33%
School 6	inadequate	inadequate	inadequate	6	2.00	40%
School 7	lacking	lacking	lacking	3	1.00	20%
School 8	good	adequate	lacking	8	2.67	53%
School 9	adequate	adequate	inadequate	8	2.67	53%

not found such as *frequently asked questions*, *search function*, and *customization*. The mean scores for each of the categories ranged from 1.52 (*lacking/inadequate*) for *helps reach goal* to 2.50 (*adequate/good*) for *sense of control*. Table 25 summarizes the frequencies for each of the ratings, the percentage for each of the ratings given, and the mean scores for the five engaging categories.

Table 25. Frequencies, Means, and Percentages of Engaging Design Attributes

	Total SC	Total IM	Total E	Total HRG	Total FA	% of Rating
Good	2	5	2	3	3	8%
Adequate	19	17	16	3	5	33%
Inadequate	5	16	14	8	10	29%
Lacking	1	8	4	4	9	15%
Not found	9	8	0	9	0	15%
Mean Score	2.50	2.05	2.44	1.52	2.07	

Of all the sites only one school scored above 50% (School 3). The other eight were below 50% with the lowest at 25% for School 2. Table 26 lists the nine schools' scores for each of the engaging categories and the total points for all five categories

Table 26. Total Scores for Each of the Five Engaging Categories

	Total SC	Total IM	Total E	Total HRG	Total FA	% of Total Score
School 1	8	16	8	5	8	45%
School 2	7	5	6	3	4	25%
School 3	11	17	13	7	10	58%
School 4	7	11	9	4	4	35%
School 5	8	12	12	4	5	41%
School 6	8	13	10	4	6	41%
School 7	8	8	8	2	3	29%
School 8	9	13	11	5	8	46%
School 9	9	14	11	7	8	49%

CHAPTER 5

DISCUSSION

Internet use and access are widespread; practically speaking, the public expects organizations—schools among them—to maintain a web presence. Clearly, schools and school districts see the Internet as a technological innovation that can improve in what ways, to what depth, and how frequently it connects with their key constituencies (Department of Commerce, 2004; Abuhamdieh, Kendall, and Kendall 2002). Schools are increasingly using the Web to deliver programs, provide services, and communicate with the public (Schneider and Buckley, 2000). School web sites are not only being used to inform the public, but they are also being used as a marketing tool. As Painter (2001) points out, marketing has become a function of today's educational climate. Parents are browsing the Internet not only to help them choose schools for their children, but to communicate with educators, access student data, and acquire information about daily activities. A high-quality site design can prove to be a powerful marketing tool reflecting a positive image not only to parents but also to the community at large (Geest, 2001).

One may argue that a public image reflected through school web sites is mediated by the quality attributes of the site. Although experts can provide models for quality web design, only the end-user can judge the site's quality as it relates to his needs. Bunz (2002) maintains that web sites designed to meet the needs of a target audience call for feedback from end-users in the evaluation process—and it was this angle or perspective to which the present study attended. Using parents as the intended audience, the researcher investigated one school district's web presence and detailed:

- influential factors impacting the development and maintenance of the district's school web sites
- parents' interests regarding school web site design attributes
- how well and in what ways site attributes did indeed engage parents.

The researcher used two important strategies to triangulate and confirm the study's findings. First, she collected data from five different information sources—analyzing results sequentially so that one source could inform the next. Second, she used multiple analytical

techniques to take full advantage of the variety of data gathered—thus comparing/contrasting results in several ways.

Study results are threefold. First, they provide insights into the development of school sites and the types of constraints and enablers that factor into web site design. Second, they explore the interests of the user audience in a school setting. Third, they determine quality web design as measured by the site's ability to engage the user. This chapter is a discussion of the findings and their implications for future research, and is organized as follows:

- a summary of the findings associated with each of the three research questions
- a reflective assessment of the study's strengths and limitations
- the researcher's recommendations for future research efforts
- and her concluding remarks about the study's findings

SUMMARY OF THE FINDINGS

The following subsections summarize the findings for each of the three research questions the researcher posed. Highlights include the influential factors involved with web design and development, feedback given by parents as a user audience, and a synopsis of the engaging web design assessment.

Findings RQ1: Influential Factors

The first step of the study was to identify influential factors surrounding the development of school web sites within the district—a task grounded by the understanding that media use occurs within a network of social relationships (Fulk, Schmitz, & Steinfield, 1990). A substantive research base affirms that an end-user's perceptions of and attitudes toward media are influenced by group-established social norms or by cultural definitions of accepted rational behavior. The influence of key policymakers, support personnel, and classroom teachers can positively or negatively impact the use, design, and maintenance of web sites in an educational setting.

The key district personnel that the researcher interviewed for this study were well intended and fully aware of the usefulness of a quality school web presence. They expressed four purposes for their sites: to communicate, to inform, to market, and to showcase the district to the parents and the community at large. They had recently acquired funding specifically earmarked for technology, with significant portions of it allocated to improving

the district's web presence; the district's technology plan was updated to include web design and development; and the district's strategic plan (also updated) included firm steps for marketing/communicating its 'services' via the Web. Support staff members were hired to help facilitate web design training along with other technology related responsibilities. Interviewees chatted comfortably about web site attributes that might be termed "engaging", for example, ease of use, appearance, engaging content, and help/support.

While much had been put into motion to support school web site design, interviewees were also aware of factors that constrained the district's progress. They spoke, for example, of budgetary issues—specifically, the high cost of web design technologies, competing expenditures that could not be ignored or "short-changed", and looming cuts reflecting lower enrollments and a reduced state funding. In addition, they recognized the limited design experience of their site webmasters and problems associated with the software tools used to design the sites (e.g., Frontpage found to be too difficult for inexperienced web designers). And not surprisingly, interviewees spoke of technical hurdles—including limited server space and network failures.

But the most astute among the interviewees noted constraints that were "conceptual" as well—specifically, lack of communication with the targeted audience. They saw the Web as a social phenomenon premised on communicative practices that they promoted through multiple open channels of communication (Crowston & Williams, 1996; DePaula, 2003). They recognized that open communication establishes trust and credibility between the organization and the consumer (Benun, 2003).

The district has established a Web presence to target parents as end users, yet there has been little if any interaction to understand their needs or to determine the extent to which the schools' designs engage them. The key personnel interviews suggest that contact with parents regarding their use of the schools' sites is minimal at best. To date, parent education classes have been limited to safe Internet usage—with virtually no focus on "how" or "why" parents themselves explore school sites (or how frequently). Support staff from two schools had sent home interest surveys, yet the surveys were brief and limited to classroom web pages. In effect, a bridge between the district and the parents as targeted users has yet to be established. Although the key personnel identified parents as a targeted audience, missing from the interview data was the mention of a plan to obtain feedback from the parents in the

evaluation of the schools' web designs (Bunz, 2002). The district's lack of any plan to obtain parent feedback neglects the importance of quality web design centered on the interests of the user audience (Dalglish, 2000). Obtaining parent feedback is an effective tool for measuring the quality of the schools web sites and explores the designs' abilities to engage the targeted audience (Small & Arnone, 2000). Even though key personnel had not planned to assess the needs of the parents, still they were anxious to hear the results of this case study and welcomed the opportunity to find out what parents had to say.

Findings RQ2: Parent Interests

One of the first steps in evaluating quality user-centered design is to define and weigh the needs of the targeted audience (Bowman & Willis, 2002). Benun (2003) speaks of close attention to the users' needs, goals, technical limitations, web browsing abilities, online habits—even mood. One must necessarily investigate user demography—including the level of technical fluency, the hardware and software to which users have access, and user goals and expectations for the site (Wodarz, 2001). Successful user-centered design calls for data collected via interest surveys and group interviews. Usability, according to Childs (2004), is about content that “suits” the target audience; it is contextual—in the eye of the beholder, not the designer.

In the present study, parents were the targeted audience; the researcher sought to understand their needs and interests and she captured that data via surveys sent home to parents of second and fifth graders at four of the district's nine schools. The four were chosen to represent either Title I or non-Title I status and also student enrollments of greater than or less than 500. Results of those surveys indicated that parents are relatively tech-savvy and confident of their Internet skills. Fully 97% (192) of the surveyed parents have access to the Internet and use it either *extensively* or *routinely*. Internet use largely revolves around *email*, *work*, or *education*.

The parent surveys also revealed their level of interest in 12 primarily school-related content areas. While there was some interest in all 12 areas, those receiving highest ratings included *calendars*, *student homework assignments*, and *staff contact information*; far down the list were the *lunch menu*, *principal's newsletter*, and *classroom rules*. Further analysis of the survey data revealed that the 12 areas of interest were not dependent on the school's

Title I status or enrollment size. Finally, the interests were sorted into groups related to purpose, i.e., *to communicate, to inform, to market, and to showcase*. The purpose groups were statistically tested with only one purpose proving to be significant—the purpose *to communicate*. However, ad hoc analysis seemed to suggest that the perceptual differences were related to factors outside the scope of this study—neither Title I status or enrollment size seemed to be reasons.

Parents, like many user audiences were looking for sites that: were easy to navigate; contained information that was complete and comprehensive; had site technical features, such as search tools; were current, timeless, and up-to-date; displayed content that was accurate, readable, understandable, and clear (Zhang & von Dran, 2002). The researcher extended her examination of parent interests by conducting three group interviews. Interviewees represented three of the four sampled schools, and they willingly shared their experiences with the sites. They confirmed or elaborated on their high-interest areas (a school calendar, their child's work, a lunch menu, school activities, and a school report card)—in some cases, modestly contradicting the ratings. They found the imagery attractive as well as each site's overall appearance. They largely felt the sites were current—but complained that updates weren't frequent enough. They were enthusiastic about the potential of email and other technologies for streamlining school communications—whether for attendance, teacher contact, or activity updates.

One principle of audience centered design is to talk to end users and find out which features work or do not work (Benun, 2003). In addition to design features the parents felt were helpful; the discussion groups also noted some of the troublesome or difficult 'experiences' with the schools' web sites; they mentioned problems with navigation or "labels" (titles, "buttons")—calling them "confusing" or "misleading". They expressed frustration with finding contact information for the schools and the school staffs. Because they often couldn't find the information they sought, they thought a search function would be helpful—and they advocated more generally for the district to promote the use of the web sites as replacement for other more traditional communication tools, e.g., parent newsletters, informational flyers, and handwritten notes.

Interviewees expressed some interest in the district adding interactive features to the sites for example—online payment and discussion boards; they did not necessarily elaborate

on how they would take advantage of them. Their consistent complaints about the “awkwardness” of passwords they were assigned pointed to limited understanding of the safety issues that the district faces, specifically, that “easy” passwords are easily breached, leaving everyone exposed and vulnerable. The feedback from parents can be carefully considered and then applied to improving the district’s sites and their abilities to engage parents as a user audience. The process is a constant cycle where sites are developed, tested, and redesigned to meet the end-users’ needs (Benun, 2003).

Findings RQ3: Web Site Design Attributes

The final phase of the study was designed to explore the websites themselves against standards/criteria associated with designs that attend to user engagement. As elsewhere noted, a quality school web site is an effective marketing tool for schools. Like the business community, schools are now part of an educational marketplace vying for students whose parents have an increasing number of schooling options from which to choose. Borrowing from marketing research educators can learn about quality web design used to favorably influence their “business” endeavors. Marketing, after all, is about attracting and keeping customers. To that end, Lohse and Spiller (1998) recommend web designs that promote effective customer interfaces which in turn will have a critical influence on an organization’s productivity.

The process of assessing the websites themselves was informed by results of the parent surveys and interviews *and* a cogent review of the literature—expert web designers in the education arena. McKenzie (1997), for example, argues that a “quality” school web site acts as information system for site visitors and serves as an interface between parents and the school community. Carr (2001) advocates for content that is current, simple, readable, and consistent. Wodarz (2001) stresses the importance of testing whether or not the site is meeting planned objectives/outcomes; in essence, the design’s effectiveness is determined through models provided by design experts and then modified through feedback from the targeted audience.

To assess each school’s web designs, the researcher developed a rubric structured around principles recommended by experts in the field of web design (Krug, 2000; Nielsen, 2005; Spool, Scanlon, Schroeder, Synder & D’Angelo, 1999). In order to remain true to the

audience-centered evaluation process the descriptors on the rubric were modified by the researcher according to the feedback she received from the parent surveys and group interviews.

The results found through the evaluation of the schools' web designs are discussed by comparing the mean ratings for each of the five engaging categories (see Table 25, p. 74). The mean ratings fell mostly in the range of *adequate* (3.0) to *inadequate* (2.0) for engaging web design. The highest mean rating for the five engaging categories was *sense of control* (2.5). The outcome is consistent with the level of frustration expressed by parent focus group participants. They were bothered with getting lost on the sites, missing or broken links, and the lack of a search function. Their level of frustration points to the importance of incorporating principles of usability into quality web design, i.e.; its ease of learning, its efficiency of use, its ability to be revisited, and its capacity to limit user errors (Nielsen, 2000).

The second highest mean rating (2.44) was calculated for the design attributes associated with user enjoyment. The four attributes (*images, font, layout, homepage*) affiliated with the engaging category of *enjoyable* are typically aspects that are facilitated by a CMS. The mean rating for this category could have been affected by the CMS currently being used by the district's webmasters. Both engagement categories associated with the designs' content features (*intrinsically motivating* and *focused attention*) warranted similar mean ratings of 2.05 and 2.07. Both of these content categories were rated as *inadequate* (2.0) and both were missing key aspects of engaging web design. Ultimately, users are looking for content that suits them and their family circumstances (Childs, 2004). One last area of engagement (*helps to reach goal*) received the lowest mean rating of 1.52. The district's sites lacked features such as frequently asked questions, contact information, and purpose. The design features which help parents to achieve their goals are especially important for those with average, or even below average, technical skills (Nielsen, 2000).

The researcher's assessment of the schools' site designs, provided evidence to support that the sites were *inadequate* in engaging the parent audience. Although the school district is well intended in its efforts to design web sites for the purposes of communicating, informing, showcasing, and marketing, this researcher felt the sites' designs did not meet the criteria established by descriptors contained in the rubric. A usable web site is one that allows the

users to do what they need to do, or find help easily without getting frustrated (Benun, 2003). Collectively, the sites earned scores that fell into the *inadequate* range (2.0)—they simply do not engage parents in any meaningful way. A usable site is one that allows the user to accomplish his goals with effectiveness, efficiency, and satisfaction (Spool, Scanlon, Schroeder, Synder, & D'Angelo, 1999).

The district's intention to create a more "professional and businesslike" web presence can profit by including a fundamental marketing goal to create and keep customers. A successful marketing plan requires the ability to target the audience and to identify strategies to effectively position your organization (Say, Collier, & Hoya, 2001). Web designs that promote effective customer interfaces will in turn have a critical influence on an organization's productivity (Lohse & Spiller, 1998).

STRENGTHS AND LIMITATIONS OF THE STUDY

Like all research, the design of this study showed strengths which can be built upon and weaknesses that could be improved in future studies with similar interests. This case had some issues which represented both the design's strengths and its weaknesses. The following section discusses those issues in the following order: (1) the size of the school district investigated; (2) the transition of the district's web design program during the data collection; (3) the initial use of a rubric based on the engaging quality of web design; (4) and, the parent survey developed around user-centered design.

A Small School District

This was an investigation of web design situated in a very real educational setting. The exploratory efforts of the study revealed an abundance of information on web design and development in a small suburban school district. The district was actively building its web presence and the results revealed much that can be applied to other districts' web design efforts. Although other district's can profit from much of what was learned about web site design and development; a similar study in a larger or more diverse district may face factors not found in this investigation. The district involved with this case was afforded with families who were connected to the Internet, comfortable with their browsing skills, and extensive or routine end users. One might argue that parents without Internet access and who were less comfortable with their browsing skills would express their interests much differently than the

population involved with this investigation. Although the study was strengthened by examining web design in a true educational setting, further lessons can be learned from investigations looking at a variety of districts.

Transition of District's Web Design Program

An interesting facet of the study was the district's web design program was in transition prompted by the recent acquisition of a content management system (CMS). Prior to the study the district's policymakers had initiated the process of improving its web presence. The policies and decisions had been set in motion to support the district's efforts. For example, a new content management system had been implemented, a support staff had been hired to train teachers, and funding had been acquired to finance software purchases. During the course of the data collection the district was transitioning from its old way of creating sites, using a web authoring software tool, into its new way of designing sites, via a CMS. It is difficult to determine how much the quality of the web design was impacted by the newness of the system. It may have been more beneficial to assess the sites' designs later in the district's efforts to improve its web presence. An assessment of the sites later in the implementation process could reveal the quality of the web design without the effects of transitioning into a new system. It is this researcher's opinion that the engaging quality of many of the schools' designs will improve as webmasters begin to learn the advantages offered by the CMS.

Engaging Web Design Rubric

The rubric used to measure web site engagement was rigorously designed—a tool that, with minor refinement, could be used quite successfully in other similar studies. The researcher's initial plan was to use a preexisting tool—but diligent searching revealed that no such instrument exists. The rubric designed to explore engaging web design attributes is seen as a strong contribution made by this study's efforts. Many of the available instruments used for measuring quality web design are checklists developed by experts in the field. Most of these checklists lack any theoretical grounding (Abuhamdieh, Kendall, & Kendall, 2002; Carr, 2006; Zhang & von Dran, 2002). The rubric designed for this study was grounded in a multi-layered framework building from social constructivism, to distributed cognition, moving in to *flow* theory, and branching into engagement theory. Admittedly, the rubric is in

the initial stages of development; it was tested for content validity, but the procedures were limited and the rubric needs to be more thoroughly validated. Its validity can be strengthened through a process of verifying the descriptors, determining the weighting of some of the design features, and examining the categories of engagement. It is also necessary to establish the rubric's reliability. The results produced by the tool must be measured for consistency in a variety of web site genres and in multiple research settings.

User-Centered Design Parent Survey

The survey used to gather information regarding the parent's interests is seen as another strong contribution of the study. The survey was designed to look at the web sites with an audience-centered approach within an educational setting. As previously recommended web site evaluation should be audience-centered targeting the end-user's technical fluency, individual needs, perception, and construction of meaning (Bunz, 2002). Furthermore, an effective tool for measuring the quality of a web site explores the design's ability to engage the target audience (Small & Arnone, 2000). The survey was designed to gather information regarding the parents' technical abilities, access to the Internet, and interests regarding the information contained in their child's school sites. The data gathered through the survey provided a rich source of data informing the researcher regarding the demographics and the content interests of parents at the sampled schools. However one must be concerned about the reasons why 65% of those surveyed did not respond. It is the recommendation of this researcher that a question be added to the survey to inquire why parents did not want to participate. Since all surveys were sent home with a stamped envelope, the sampled parents could have been encouraged to return the survey even though they had chosen not to participate. A simple check box could have provided important data as to why parents did not participate. This additional survey item could have informed the study about parents' discomfort with the topic, their disinterest with the school web design, or their lack of time.

RECOMMENDATIONS FOR FUTURE RESEARCH

At the conclusion of this study, one pauses to reflect on several possibilities for future endeavors. The recommendations of this researcher for future research include studies: to investigate web site development in a variety of educational settings, to test the engaging

web design rubric for reliability and validity in other web site genres, and to look at the effects of staff development on engaging web design quality.

While this study's focus was a small suburban K-8 district, future research efforts can focus on exploring school web site development in a variety of districts and grade levels. Much can be learned through an investigation of engaging web site development in school districts, i.e., either in urban or rural areas, in large and small communities, and in ethnically diverse or in economically impoverished populations. Studies can also be done regarding parent interests in other grades such as preschool, middle school or high school level.

Another suggested area of research is an investigation involving other web site genres. As previously mentioned the rubric, especially created for the purposes of this study, requires more rigorous testing in order to prove its validity and reliability. The testing of the rubric in other genres such as sports, news, business, higher education, and so on could provide designers with a valid tool to assess the engaging design quality of web sites in an assortment of genres.

One last recommendation is an experimental study investigating the effects of staff development on the engaging quality of classroom web sites. At the conclusion of this study the question arose whether the engaging quality of the school's web site was a result of the level of webmaster's design experience. Simply said, "Does training in engaging quality web design have an effect on engaging design quality?" An experimental study suggests an investigation which measures the initial level of the web designers' experiences in relation to the engaging quality of their web design. The webmasters would then receive instruction on quality design attributes that engage the targeted user audience. The instruction would then be followed by a second evaluation of the webmasters' level of design experience and its effects on the engaging quality of their web designs.

CONCLUSIONS

Surprisingly, the implications of this study are as much about the data not found as about the data collected. The missing elements offer a possible explanation for discrepancies found between the district's intention and its implementation of an improved web presence. It is the opinion of this researcher that the district's minimal expectation for parents to use the web sites, the parents' lack of feedback to the district, and a limited focus on quality design

features all contributed in some fashion to creating a gap between the district's intentions and its implementation to provide an improved web presence.

For example, the district was found to be well intended in its endeavors to improve its web presence. The key personnel revealed that a program was in place to deliver web designs that consistently represented the district in a positive light. Measures were put into place to provide web designs that not only portrayed the academic progress of their schools but also projected an image of a technology minded and a marketable district. Yet an element was found to be missing; the data revealed minimal evidence that the district had an expectation for parents to use the sites. As indicated in the parent interviews, promotion of the sites was in newsletters, student handbooks, and through teacher recommendations. Parent education classes focused on the safety of Internet usage, but not on information available on the schools' web sites. Parents stated they were often given information through more traditional venues such as phone calls, notes from teachers, and flyers sent home with students. It is important to understand that media use occurs within a network of social relationships. Researchers have stated that an end-user's perceptions and attitudes towards media can be influenced by social norms established by the group or by cultural definitions of accepted rational behavior (Fulk, Schmitz, & Steinfield, 1990). The district values the Web as a tool of communication, but only minimally promotes and encourages its use. One support staff member articulates this point by commenting,

I'm posting information on the school website about upcoming events and parents are calling the secretary and so what's happening is the secretary tells them the information, but the secretary should be saying, "*Did you know all of this is on our web site now?*"

A second area not evidenced in the data was the mention of parents who had expressed their interests or concerns to district policymakers. The data revealed that parent survey respondents showed an interest in all of the 12 school web site content areas. It indicated that 97% of the respondents' homes had Internet access and the parents were mostly extensive or routine users of the Web. The parents were not only connected, but were tech-savvy and enthusiastic about the potential advantages that the school web sites offered. Several parents voiced the benefits of using the schools' sites to disseminate information, yet there was no data to support that any request had been made to the district's key personnel for an improved Web presence. According to marketing research, even a small group of

individuals can influence an organization either positively or negatively. These influential customers are often referred to as *market mavens* (Feick & Price, 1987). Within the context of media, a small powerful group can also influence others and their perceptions of media use (Fulk, Schmitz, & Steinfield, 1990). Parents with attitudes, statements, and behaviors that encourage a more efficient use of the schools' web sites can impact not only the district's policies but also other parents' opinions towards school web site usage (Schneider & Buckley, 2000). Other researchers have said that online technologies are not likely to be adopted if there is not sufficient demand from the end-users themselves (Hinnant & O'Looney, 2003). One teacher explains her lack of motivation from maintaining a site that she feels no one visits. She said,

You know I just want parents to be able to go to it and use it and get the information that they need. Unfortunately, there's no feedback from whether or not parents go on there. There's no feedback and that's kind of frustrating to me from the standpoint I do this blind.

An influential group of parents wanting more from their children's school web sites can motivate teachers and district personnel by voicing their concerns or showing their enthusiasm for the sites.

Again the district proved to be well intended in their efforts to establish a positive public image by providing school web sites as an open window to the community. However, the results of the evaluation of the district's school web sites revealed that the sites were *inadequate* in their use of engaging web design. One can argue that although the district had a tacit knowledge of quality design elements this knowledge was not made explicit in the district's plan to improve its web presence. One policymaker explained the district's desire,

The superintendent has been instrumental in the necessity of a new website design that is more community friendly, teacher friendly, and student friendly, and presents a more professional appearance. We are in the business of education but we're also in a very competitive business that we need to look like professionals in what we do. And the days of -- I'll call it "cutesy-pie" web sites is fading into the background. We want to present a very professional business like appearance on our web site that's very easy to navigate, that has very current and update information that's accurate and presented in attractive and easy to access as well as easy to read format.

Key personnel often talked about design features that were important to quality web design; however missing from the data were any comments on how the district planned to build its sites with quality design attributes. Staff development focused on the use of the

CMS and not on features of quality web design. Teacher training for classroom web pages relied mostly on trial and error with little instruction on aspects of good web design. The webmasters level of expertise varied from school to school. Only one member had formal web design training; all other staff members were self taught. The district's implementation of an improved web presence could profit by making this tacit knowledge of quality web design more explicit. Staff trainers, district policy makers, and webmasters given more explicit knowledge of quality design attributes would result in school sites that more closely approach the district's intention of a more professional and businesslike appearance.

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APPENDIX A
INTERVIEW PROTOCOLS

District Administrators
Interview Protocol

1. Introduction of study and explanation of informed consent document including permission to audiotape and take notes during the thirty minute interview
2. Questions regarding the purpose of the study and clarification of any areas that may be confusing to participant
3. Get signature on consent form and give a copy to the participant
4. Questions will emerge from the discussion and will cover the following topics to address the study's purpose regarding the constraints and the enablers involved with developing school web sites within the district.
 - What are the purposes or intentions of the schools' web sites?
 - Who are the intended target audiences?
 - What are some of the enablers you and others face in designing, developing, and maintaining school/district web sites?
 - What are some of the constraints you and others face in designing, developing, and maintaining school/district web sites?
 - How are the responsibilities for web design, development, and maintenance distributed within the district?

Phone Contact Script for Participation in Parent Focus Groups

Hi, my name is Jane Beeman. I am a doctoral student in the joint program between San Diego State University and the University of San Diego. You filled out a parent survey regarding school web sites and indicated your interest in participating in a parent focus group. The dissertation study I'm conducting explores the process by which school (and district) web sites are developed and how well they engage parents as a target audience. Your participation, which is voluntary, will help me better understand quality web design from a parent's perspective. The discussion will take place at <name of restaurant or school site> and will last no more than forty-five minutes. The interview will be audiotaped and a scribe will be there to take notes as well. All topics covered will be related to the kinds of tasks/activities that interest you when you visit a school or district web site. You will be encouraged to offer your insights, but you will not be obligated to answer any of the questions. If you begin to feel uncomfortable at any time you may choose to end your participation. You may also make a choice not to be involved after the interview is over. If this is the case, I will not use your data. Your choice whether or not to participate will not affect your relations with the District or your child's school site. You will receive a summary of the final observations of the interview by electronic mail to the email address on file for you. With the exception of my faculty supervisor, no one will have access to my interview notes or the audiotape; both will be destroyed when the study concludes in Fall 2007. I will be glad to answer any questions you might have about the study at this time. Should you have any further questions for my supervisor or the Institutional Review Boards of San Diego State University or the University of San Diego I will be glad to share the contact information with you.

Contact information (if needed)

Investigator:
Jane Beeman, SDSU/USD JDP Doctoral
Candidate
Email: janebeeman@sbcglobal.net
Phone: 619.316.6258

Faculty supervisor:
Dr. Marcie Bober, Department of Educational
Technology
San Diego State University
Email: bober@mail.sdsu.edu
Phone: 619.594.0587

Institutional Review Board:
Division of Research Administration
San Diego State University
Email: irb@mail.sdsu.edu
Phone: 619-594-6622

Office of the Vice President and Provost
University of San Diego
5998 Alcalá Park
San Diego, CA 92110
Phone: 619-260-4553

Parent Focus Group Interview Protocol

1. Introduction of study and its overarching purpose highlighted by the following:
 - a. School web sites are seen as part of the public face of education. This case study explores the notion that well-designed and multi-featured school web sites can enhance a district's public image and create the perception of excellence and competence.
 - b. I have been exploring the district's approach to web site development, maintenance, purpose, and intended user audience.
 - c. I am also looking at the nine school sites to determine how well they adhere to generally recognized design attributes.
 - d. Finally, I am looking into the ways that the sites engage the parents as a targeted audience.
2. Explanation of informed consent document including permission to audiotape and take notes during the forty-five minute discussion.
3. Participants will refer to their copy and follow along. Participants will be encouraged to ask questions to seek clarification.
4. Discussion questions
 - About how often do you visit our child's school web site – multiple times per week, about once a week, a few times a month, about once a month, or even less often?
 - For what reasons do you typically access your child's school web site?
 - What elements in your child's school web site assist you in finding information?
 - What information on the site do you think is unnecessary to include? Why?
 - How current is the information on the site?
 - How accurate is the information on the site?
 - How would you rate the overall appearance of the site? Why?
 - While displaying one of the school's sites ask:
 - What appeals to you about this site?
 - What elements are not helpful to you as a user?
 - How is the web site promoted by the teacher, the principal, or other parents?
 - What opportunities are offered on the sites for you to express your thoughts and opinions?
 - How much would you be interested in using features such as blogs, discussion boards, or email with school staff?
 - What types of problems may arise from the presence of these types of electronic features?
 - Are there "payment" options in which you would be interested?
 - What school items would you want to pay for online?
 - What might be some of the advantages of paying online?
 - What might be some of the disadvantages of paying online?
 - How valuable is your child's school web site as a source of information during a school lockdown or school closure?
 - How well are the web sites used for disaster preparedness?
 - What types of items might be listed to inform parents during these types of school or community emergencies?
- During the last five minutes I will allow comments regarding anything about school web sites that wasn't covered in the first 40 minutes of the discussion.

APPENDIX B
PARENT SURVEY

School Web site Parent Survey
Return survey in the stamped envelope attached

Your Age Under 25 26-30 31-35 36-40 41-45 Over 45

Indicate number of school aged children in each grade level range

<i>Example: K-2</i>	K-2	3-5	6-8	9-12
_____	_____	_____	_____	_____

I have Internet access in my home Yes No

My home Internet connection is

Phone/Dial-up	DSL/AT&T	Cable/Cox
_____	_____	_____

Describe your Internet usage

Extensive The Internet is part of my everyday life	Routine I access the Internet often to accomplish a variety of tasks	Occasional I access the Internet once in awhile for a specific task	Limited I rarely(if ever) access the Internet
_____	_____	_____	_____

Reason(s) I access the Internet (Number the top three reasons you access the Internet with #1 being the highest.)

Job related	Entertainment	Browse the news	Sports	Chats/blogs
_____	_____	_____	_____	_____
Education	Health	Email	Weather	Purchasing
_____	_____	_____	_____	_____

Please rate your level of interest for finding these areas on a school web site:

1. Grade level academic standards	High interest	Some interest	Little interest
	_____	_____	_____
2. Student homework assignments	High interest	Some interest	Little interest
	_____	_____	_____
3. Principal's newsletter	High interest	Some interest	Little interest
	_____	_____	_____
4. Display of students' work	High interest	Some interest	Little interest
	_____	_____	_____

School Web site Parent Survey

Please rate your level of interest for finding these areas on a school web site:

	High interest	Some interest	Little interest
5. Teacher background information			
6. School report cards			
7. School/ staff contact information			
8. Calendar of events			
9. Parent involvement opportunities			
10. Lunch menu			
11. Links to educational resources			
12. Classroom rules			

Any other areas of interest not listed: (Use back if needed)

Have you ever accessed your child's school web site? Yes No

- -

Discussion Group Invitation

Interested parents are invited to provide more feedback on school web site features by participating in a discussion group held at your child's school. The time and location will be announced at a later date. If you are willing to add to this study further please provide the following contact information. I assure you that this information will remain confidential and will not be used for any other purpose.

Name _____

Phone _____

Email address: _____

Best time to meet: (Circle one)

10-11 AM 12-1 PM 2-3 PM 5-6 PM 7-8 PM

Best day to meet: (Circle one)

Monday Tuesday Wednesday Thursday Friday

APPENDIX C
WEB SITE RUBRIC

Like literature, web sites can be organized into genre and sub-genre. However, a common design element on which all web designers focus is *engagement*—specifically, engaging the end-user. The following rubric lists 20 attributes associated with quality web site design—and, more particularly, end-user engagement; they’re organized into five categories: sense of control, intrinsic motivation, enjoyment, helps to reach goal, and focused-attention.

The rubric is designed to measure the extent to which a web site’s design engages a targeted audience. The rubric was created to address web sites generically and can be adapted to evaluate any specific genre. The descriptors for *Intrinsically Motivating* and *Focused Attention* can to be modified to target genres such as: sports, education, entertainment, government, and more. The descriptors can be further refined to address specific settings/audiences such as college, adult, K-12, or primary education. Furthermore, the two categories have been assigned a total of 45 points allowing greater weight for scoring their key components. The other three categories (*Sense of Control*, *Enjoyable*, and *Helps to Reach Goal*) are consistent across the genres and will need little if any modification. The highest points possible for each of the engaging web site categories are:

Sense of control (Navigability)	= 20 points
Intrinsically motivating (Content)	= 30 points
Enjoyable (Appearance)	= 20 points
Helps to reach goal (Helps)	= 15 points
Focused attention (Content)	= 15 points
Possible overall score	= 100 points

Note: A score of zero is possible if no evidence of the attribute exists on the site; for example, a site without a search function on any page would receive a zero for *Search function*.

The rubric’s attributes were informed by experts in the field of web site design (Benun, 2003; Bowman & Willis, 2002; Carr, 2006; Chandler & Hyatt, 2003; Dalglish, 2000; Flanders & Willis, 1998; Granath, 2005; Grenier, 1998; Krug, 2000; Levine & Carr, 2006; Nielsen, 2005; Schrock, 2006; Small & Arnone, 2001; Spool, Scanlon, Schroeder, Synder & D’Angelo, 1999; Waller, 2006).

	Attribute	Description	Scale	Score	Comments
Sense of control	Download time	Web pages appear within short time span creating a smooth transition from page to page.	Good Inadequate 5 --- 4 --- 3 --- 2 --- 1 Exemplary Adequate Lacking		
	Index/Site map	Index/ Site map is organized and easy –to- use, all links are active and clearly labeled with consistent layout from page to page.	Good Inadequate 5 --- 4 --- 3 --- 2 --- 1 Exemplary Adequate Lacking		
	Search function	Internal search function provided on the all pages within web site having capabilities for advanced searches with multiple variables.	Good Inadequate 5 --- 4 --- 3 --- 2 --- 1 Exemplary Adequate Lacking		
	Active links	All image and text links are marked and active; link names are in harmony with targets; cues for clickable content are coherent; visited links are highlighted	Good Inadequate 5 --- 4 --- 3 --- 2 --- 1 Exemplary Adequate Lacking		
Intrinsically Motivating	Scope	The scope of the content is broad and comprehensive. The content addresses a wide range of topics relevant to the organization’s mission and purpose.	Good Inadequate 5 --- 4 --- 3 --- 2 --- 1 Exemplary Adequate Lacking		
	Depth	Individual topics, relevant to the organization’s mission and purpose are addressed in detail providing multiple facets and examples for each specific area.	Good Inadequate 5 --- 4 --- 3 --- 2 --- 1 Exemplary Adequate Lacking		
	Currency	Frequency of updates is easy to find with date posted of latest revision. Content reflects the most current information of the organization.	Good Inadequate 5 --- 4 --- 3 --- 2 --- 1 Exemplary Adequate Lacking		
	Authority	Authorship is credible and/or source of information is clearly acknowledged.	Good Inadequate 5 --- 4 --- 3 --- 2 --- 1 Exemplary Adequate Lacking		
	Accuracy	The information is consistent with other known sources.	Good Inadequate 5 --- 4 --- 3 --- 2 --- 1 Exemplary Adequate Lacking		
	Customization	Site design provides one or more opportunities for user personalization, e.g.: email options, password protection, encryption protection for online purchases, adaptations for those with disabilities, choice of language.	Good Inadequate 5 --- 4 --- 3 --- 2 --- 1 Exemplary Adequate Lacking		

	Attribute	Description	Scale	Score	Comments
Enjoyable	Appealing images	Images support a theme consistent with the organization's setting, adding to both the site's function and appearance. They are used to create a balance with the text and compliment the overall site design.	Good Inadequate 5 ---- 4 ---- 3 ---- 2 ---- 1 Exemplary Adequate Lacking		
	Font size and background color	The design uses the following: 1) familiar fonts that are at least 12-points (Times New Roman, Georgia, Arial, Helvetica, or Verdana; 2) content is black text on plain, high-contrast backgrounds; 3) colors are used to group related information; 4) and common headings are uniform.	Good Inadequate 5 ---- 4 ---- 3 ---- 2 ---- 1 Exemplary Adequate Lacking		
	Layout	Layout contains the following: 1) items on the page are placed in an order that is uniform and reflect a degree of importance; 2) white space is well- balanced with text; 3) length of lines is appropriate to facilitate ease of scanning; 4) length of page covers the necessary content but does not require excessive scrolling.	Good Inadequate 5 ---- 4 ---- 3 ---- 2 ---- 1 Exemplary Adequate Lacking		
	Homepage	The homepage contains the following features: 1) communicates the site's purpose; 2) shows major options available; 3) the majority of the page appears on the monitor with of a limited amount of text; 4) and users have easy access to the homepage from every other page in the site.	Good Inadequate 5 ---- 4 ---- 3 ---- 2 ---- 1 Exemplary Adequate Lacking		
Helps to reach goal	FAQ's/Helps	Commonly asked questions are clearly marked and well organized. Questions are comprehensive and relevant to the target audience. Questions can be searched and sorted.	Good Inadequate 5 ---- 4 ---- 3 ---- 2 ---- 1 Exemplary Adequate Lacking		
	Contact information	Comprehensive contact information is available, e.g., mailing address, phone number with area code, FAX number, directions, email addresses of organization's officials, and/or webmaster information.	Good Inadequate 5 ---- 4 ---- 3 ---- 2 ---- 1 Exemplary Adequate Lacking		
	Purpose	The purpose of the site is clearly evident and identified by mission, purpose statement, content, use of images, and URL (.gov, .net, .com, .edu, .mil, .org)	Good Inadequate 5 ---- 4 ---- 3 ---- 2 ---- 1 Exemplary Adequate Lacking		

	Attribute	Description	Scale	Score	Comments
Focused Attention	Links to outside resources	Links to external resources are provided. The external links are relevant, current, active, and easy to access.	Good Inadequate 5 ---- 4 ---- 3 ---- 2 ---- 1 Exemplary Adequate Lacking		
	Data available	Current data relevant to organization (e.g. profits, sport statistics, sales, costs, grades, calendar of events) are available and updated at timely intervals throughout the year.	Good Inadequate 5 ---- 4 ---- 3 ---- 2 ---- 1 Exemplary Adequate Lacking		
	Background information	Information regarding key personnel, archived background information, or detailed product descriptions affords a comprehensive source of information for interested users.	Good Inadequate 5 ---- 4 ---- 3 ---- 2 ---- 1 Exemplary Adequate Lacking		

APPENDIX D
LETTERS OF INFORMED CONSENT

Consent to Act as a Research Subject

School Web sites within the Educational Marketplace

I'm Jane Beeman, a student in the San Diego State University/University of San Diego Joint Doctoral Program in Education. The dissertation study I'm conducting explores the process by which school (and district) web sites are developed and how well they engage parents as a target audience. Your participation, which is voluntary, will help me better understand quality web design from a district administrator's perspective. The discussion will be audiotaped with your permission, and I will be taking notes as well. Among the topics we'll cover are:

- Web site purposes or intentions
- Target audiences
- Enablers and constraints you and others face in designing, developing, and maintaining school/district web sites
- How Web work is distributed (shared responsibilities)

You can change your mind about participating at any time—and I will not use your data if you choose not to be involved in the study *after* our interview is over.

Given your position, I cannot fully assure your anonymity; therefore, I will share my analysis of this interview (and confirm my interpretation with you) prior to integrating it into my dissertation. With the exception of my faculty supervisor, no one will have access to my interview notes or the audiotape; both will be destroyed when the study concludes in Fall 2007.

You can contact me or my faculty supervisor with any questions you might have about the study.

Investigator:

Jane Beeman, SDSU/USD JDP Doctoral Candidate
Email: janebeeman@sbcglobal.net
Phone: 619.316.6258

Faculty supervisor:

Dr. Marcie Bober, Department of Educational Technology
San Diego State University
Email: bober@mail.sdsu.edu
Phone: 619.594.0587

If you have any questions about your rights as a participant in this study, you may contact the Division of Research Administration San Diego State University (telephone: 619-594-6622; email: irb@mail.sdsu.edu) or Office of the Vice President and Provost, University of San Diego (telephone: 619-260-4553).

June 2007

Dear <Teacher's name>,

I'm Jane Beeman, a student in the San Diego State University/University of San Diego Joint Doctoral Program in Education. As a practicing classroom teacher, I have grown increasingly interested in school web sites—specifically, the process by which they are designed and maintained and their impact on parents as end-users. This dual focus is at the heart of the dissertation study I'm currently conducting.

As a part of this research, I'll be working directly with the 2nd and 5th grade teachers at your school. I've selected your school because it broadly represents a cluster of district demographics in which I am interested. <Principal's name> has given me permission to send home a parent survey with your second or fifth grade students.

Parents' responses will help me better understand how their perspectives and vantage point shape web site design and organization/structure. The survey itself (attached to this form) is organized into four areas: a) the comfort level of parents with Internet use; b) home Internet availability; c) the kinds of tasks/activities that parents tend to generally perform online; and d) the kinds of tasks/activities that interest them when they visit school or district web sites. It closes with an invitation to parents to participate in a semi-structured focus group to be scheduled at a time and place convenient for them. You'll notice that parent participation is completely voluntary—and in choosing to participate their responses will remain confidential (accessible only to me and my faculty supervisor).

You will pass out the surveys with the attached return envelope to your students. Each student should also be given a pencil as an incentive to take the survey home to his/her parents. You will not have to collect anything, since the surveys will be mailed back to me in pre-addressed stamped envelope. Parents who indicate they are willing to participate in a focus group will be contacted to meet with me in an informal discussion group regarding their experiences and interests in school web sites. For further information regarding this study or your rights you may contact:

Jane Beeman	Dr. Marcie Bober, Ph.D.	SDSU	USD
(619) 316-6258	(619) 594-0587	(619) 594-6622	619-260-4553
janebeeman@sbcglobal.net	bober@mail.sdsu.edu	irb@mail.sdsu.edu	

Thank you,

Jane Beeman

Doctoral Candidate,

SDSU/USD Joint Doctoral Program

September 2007

Dear Parents,

I'm Jane Beeman, a student in the San Diego State University/University of San Diego Joint Doctoral Program in Education. As a practicing classroom teacher, I have grown increasingly interested in school web sites—specifically, the process by which they are designed and maintained and their impact on parents as end-users. This dual focus is at the heart of the dissertation study I'm currently conducting.

As a part of this research, I'll be working directly with 2nd and 5th grade parents at your child's school. I've selected this school, along with three others, because they target a sample of parents representing not only the interests of the study but also the district as a whole.

Attached is a survey that I asked your child's teacher to send home with him/her. As a token of my appreciation, s/he received a pencil. The responses will help me better understand how parent perspectives and the parent vantage point shape web site design and organization/structure.

As you'll see, the survey itself is organized into four areas: a) the comfort level of parents with Internet use; b) home Internet availability; c) the kinds of tasks/activities that parents tend to generally perform online; and d) the kinds of tasks/activities that interest them when they visit school or district web sites. It closes with an invitation to you to participate in a semi-structured focus group that will be scheduled at a mutually convenient time and place.

Your participation is completely voluntary—and your confidentiality is assured. Only my supervising faculty and I will have access to the responses you provide, with results reported only in the aggregate (group)—not by individual.

Please return the survey in the enclosed stamped envelope. I'll contact you within two to three weeks' time to schedule the focus group session—should you choose to participate by filling out the information in the second page of the survey.

I appreciate your time and welcome your feedback. For further information about this study or your rights as a participant you may contact:

Jane Beeman	Dr. Marcie Bober, Ph.D.	SDSU	USD
(619) 316-6258	(619) 594-0587	(619) 594-6622	(619) 260-4553
janebeeman@sbcglobal.net	bober@mail.sdsu.edu	irb@mail.sdsu.edu	

Thank you,

Jane Beeman

Doctoral Candidate,

SDSU/USD Joint Doctoral Program

Consent to Act as a Research Subject

School Web sites within the Educational Marketplace

You are being asked to participate in a research study. Before you give your consent to volunteer, it is important that you read the following information and ask as many questions as necessary to be sure you understand what you will be asked to do.

As indicated on the parent survey sent home with your second or fifth grade student you expressed an interest in participating in this focus group interview. The group interview will last about 45 minutes, and is meant to help me learn more about your views on school web sites and how they engage parents as a target audience.

I want to emphasize the following points. Please read each one carefully and ask any questions you might have. Once all your questions have been fully answered, please sign and date the form.

- Your part in the interview will help me to better understand how parent perspectives shape school web site design and its organization. Your name will not be attached to any of the data and your input will remain strictly **confidential**.
- Because a focus group is like a conversation, it is difficult to accurately capture what everyone is saying through “regular” note-taking. I plan to audiotape the session and then transcribe the tapes. A scribe will also be present to take notes in order to better document the discussion. The audiotape will be destroyed once it is transcribed and proofread for errors.
- I encourage and value your opinion. However, some may feel uncomfortable speaking in a group format. If you begin to feel uncomfortable at any time you may end your participation.
- You may choose not to be involved after the interview is over. If this is the case, I will not use your data. Your choice whether or not to participate will not affect your relations with the District or your child’s school site.
- You will receive a summary of the final observations of the interview by electronic mail to the email address on file for you. If you prefer the summary be sent to your home address you may leave that with me after the interview.
- You can contact my faculty supervisor or me with any questions you might have about the study.

Investigator:

Jane Beeman, SDSU/USD JDP Doctoral Candidate

Email: janebeeman@sbcglobal.net

Phone: 619.316.6258

Faculty supervisor:

Dr. Marcie Bober, Department of Educational Technology

San Diego State University

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If you have any questions about your rights as a participant in this study, you may contact the Division of Research Administration San Diego State University (telephone: 619-594-6622; email: irb@mail.sdsu.edu) or Office of Vice President and Provost, University of San Diego (telephone: 619-260-4553)

APPENDIX E

CODE LISTS

Purposes

Q1.p Intended target audience

The target audience is the group of people for whom the web design is purposed to engage.

Q1.p Purpose as a communication tool

Web sites designed for the purpose of communication with parents, students, teachers, and the general public.

Q1.p Purpose as a marketing tool

Web site attributes designed for the purpose of displaying the accomplishments of district, school, or students in order to sell the district to prospective parents or the general public.

Q1.p purpose as an instructional tool

Web site attributes designed for the purpose of an instruction within the school site or at home.

Q1.p Purpose to facilitate district business

Web site attributes designed for the purpose of doing business within the district, i.e., FAQ's, forms, substitute access, and various management aspects of the district.

Q1.p Purpose to showcase accomplishment

Web site attributes designed for the purpose of displaying the accomplishments of district, school, or students out of a sense of pride and achievement.

Enablers

Q1.e Current web presence enabled by Schoolwires CMS

Schoolwires is Web design content management system (CMS) currently being transitioned into the district web site design and development, It is seen as a more user friendly and economically efficient system.

Q1.e Design motivated by positive feedback

Design that is motivated by written or verbal feedback from teachers, parents, students, and/or administrators, encouraging designers to post and/or update a classroom or school web pages.

Q1.e Equipment which facilitates school and district web presence

Hardware and software purchased and made available to facilitate district, school, and classroom web sites.

Q1.e Motivated by budgetary allotments

Budgetary allotments set aside or disbursed to facilitate web site design, development, and maintenance.

Q1.e Parent education promoting web site usage

Factors related to the District's intentions to promote Internet usage at home through parent education.

Q1.e Staff development enabling web design and usage

Responses related to staff development facilitating classroom web design or the use of web sites in instruction.

Q1.e Support staff enabling district and school web presence

District and school administrators with responsibilities to facilitate the development, design and maintenance of district, school, and/or classroom web sites.

Q1.e Teacher incentives

Stipends, release days, or recognition of teacher's efforts in establishing and maintaining a web presence.

Q1.e Simple Web authoring tool

Web Blender is used at two schools under the QZAB loan program enabling teachers with little or no web design experience to maintain a web presence.

Q1.e Web presence motivated by administrative expectation

Web design, development, and maintenance of school and/or classroom web presence motivated or driven by district or site administrator's expectation.

Constraints**Q1.c Budgetary limitations**

Budgetary parameters which limit or constrain the acquisition, development, and maintenance of school or district web sites.

Q1.c Design concerns for parents as target audience

Administrative perception of parent characteristics in regards to constraints related to lack of Internet access, diverse languages, and inexperience with the Internet.

Q1.c Lack of experience in web design

Administrative perception minimal levels of expertise for teachers, administrators, and support staff in web design and the constraints involved with low levels of design expertise.

Q1.c Technical constraints

District administrators' perceptions on design limitations imposed by IT decision makers, system interruptions, or equipment capacity causing difficulties with the district's web presence.

Q1.c Time constraints impeding school or district web presence

Factors related to time which impede the design or continued maintenance of classroom web sites.

Q1.c Web authoring tools constraining widespread web design

Web authoring software, such as Front Page and Dreamweaver, used in the past and currently being replaced. These authoring tools are still being used by more advanced users but the level of expertise required to use the tools excluded most of the teachers with limited design experience.

Knowledge of Design Attributes**Q1.a knowledge of design attributes that are intrinsically motivating**

Administrative comments pointing their knowledge that web sites contain attributes classified as intrinsically motivating.

Q1.a knowledge of design attributes that facilitate a sense of control

Administrative comments pointing their knowledge that web sites contain attributes classified as facilitating a sense of control.

Q1.a knowledge of design attributes that facilitate enjoyment

Administrative comments pointing their knowledge web sites contain attributes classified as facilitating enjoyment.

Q1.a knowledge of design attributes that facilitate focused attention

Administrative comments pointing their knowledge that web sites contain attributes classified as facilitating focused attention.

Q1.a knowledge of design attributes that help user to reach goal

Administrative comments pointing their knowledge that web sites contain attributes classified as helps the user reach goal.

Parents' Interests Related to a Sense of Control Attributes**Q2 s_o_c parents' ease of navigation**

Comments related to sense of control, such as, the parents' views regarding the ease of navigation within their child's school web site.

Parents' Interests Related to Intrinsically Motivating Attributes**Q2 i_m Parents' interests in calendar**

Comments associated with the type of content providing a range of topics intrinsically motivating for the site's targeted audience such as a school calendar.

Q2 i_m parents interests in child's work

Comments associated with the type of content providing a range of topics intrinsically motivating for the site's targeted audience such as examples of their child's work.

Q2 i_m parents' interests in customization

Comments associated with the type of content allowing for customization which would be intrinsically motivating for the site's targeted audience.

Q2 i_m parents' interests in lunch menu

Comments associated with the type of content providing a range of topics intrinsically motivating for the site's targeted audience such as a school lunch menu.

Q2 i_m parents' interests in schools' or classroom activities

Comments associated with the type of content providing a range of topics intrinsically motivating for the site's targeted audience such as a school or classroom activities.

Q2 i_m parents' interests in schools' report card

Comments associated with the type of content providing a range of topics intrinsically motivating for the site's targeted audience such as statistical data regarding the standardized testing results, demographics, and teacher qualifications on their child's school web site.

Q2 i_m parents' views of accuracy

Comments related to an intrinsically motivating attribute such as the parents' views regarding the accuracy of the information posted on their child's school web site.

Q2 i_m parents' views of currency

Comments related to an intrinsically motivating attribute such as the parents' views regarding the currency of the information posted on their child's school web site.

Parents' Interests Related to Enjoyable Attributes**Q2 e Parents' views on site's images**

Comments associated with the site's ability to provide an enjoyable experience, such as, parent feedback regarding the quality of images on their child's school web site.

Q2 e Parents' views on site's appearance

Comments associated with the site's ability to provide the user with an enjoyable experience, such as, the parents' views on the quality of the appearance of their children's school web site.

Parents' Interests Related to Attributes Which Help to Reach Goal**Q2 h_r_g Parents' goals achieved**

Comments associated with the site's ability to help the user reach his/her intended goal, such as, the parents' views on the ability to accomplish their intended goals when accessing their children's school web site.

Q2 h_r_g Parents' interests in contact information Comments associated with the site's ability to help the user reach his/her intended goal such as the parents' interests in contacting school officials facilitated by information provided on the school or district web site.

Q2 h_r_g Parents' interests in interactive options
Comments associated with the site's ability to help the user reach his/her intended goal such as the parents' interests in finding interactive options offered on the site i.e. blogs, bulletin boards, and email.

Q2 h_r_g Parents' views on school web site promotion
Comments related to the site's ability to help the user accomplish his/her goal such as the parents' views on the promotion of school web site's content and/or usefulness from teachers, principals, and/or district administrators.

Parent Interests Related to Attributes Which Focus Attention

Q2 f_a Parents' interests in educational resources
Comments associated with the site's ability to provide opportunities for focused attention with links to outside resources.

Q2 Frequency of parent use
This code identifies the rate of recurrence for which parents access their child's school web site.

Web Site Attributes Related to Sense of Control

Q3.s_c attributes facilitating a sense of control
Web site attributes which assist the user's navigation of the site i.e. active links, internal search function, useful index/site map, and smooth download of images and pages.

Q3.s_c attributes limiting a sense of control
Web site attributes which limit the user's navigation of the site i.e. inactive links or broken links, lack of an internal search function, confusing index/site map, and/or interrupted or slow download of images and page.

Web Site Attributes Related to Intrinsic Motivation

Q3.i_m attributes limiting intrinsic motivation
Web site attributes which inhibit intrinsic motivation i.e. lack of scope, lack of depth, out dated content, lack of credible content, lack of accurate content, little or no opportunity for customization.

Q3.i_m attributes promoting intrinsic motivation

Web site attributes which promote intrinsic motivation, i.e., content characterized by scope, depth, currency, credibility, accuracy, and opportunities for user customization.

Web Site Attributes Related to Enjoyment

Q3.e attributes facilitating an enjoyable experience

Web site attributes which facilitate the user's enjoyment of a web site i.e. appealing images, consistent and familiar font and background colors, well organized layout, and /or a well defined homepage.

Q3.e attributes interfering with an enjoyable experience

Web site attributes which limits the user's enjoyment of a web site i.e. appealing images, consistent and familiar font and background colors, well organized layout, and /or a well defined homepage.

Web Site Attributes Related to Helps To Reach Goal

Q3.g attributes facilitating accomplishment of goal

Web site attributes which assist the user in accomplishing his/her goal i.e. presence of FAQ's/Helps, comprehensive contact information, clearly stated purpose.

Q3.h_r_g attributes limiting accomplishment of goal

Web site attributes which inhibit the user in accomplishing his/her goal i.e. lack of FAQ's/Helps, limited contact information, unclear or unstated purpose.

Web Site Attributes Related to Focused Attention

Q3.f_a attributes facilitating focused attention

Web site attributes which help to focus the user's attention on the web site i.e. links to outside resources, data relevant to site's purpose, and/or additional background information.

Q3.f_a attributes limiting focused attention

The lack of web site attributes which help to focus the user's attention on the web site i.e. links to outside resources, data relevant to site's purpose, and/or additional background information.