
Disaster on the web?

A qualitative analysis of disaster preparedness websites for children

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Abstract

In a qualitative analysis using stakeholder theory, child development research, and website usability criteria, the authors examine three disaster preparedness websites created for children by the U.S. Federal Emergency Management Agency (FEMA). The sites were characterised by outdated content and technology, low levels of dialogic communication, and poor usability compared with other offerings for kids on the web, failing to fully account for the varied emotional, developmental, and cognitive stages of their stakeholders. Without more attention to stakeholder needs and stages, the three sites may fail to effectively accomplish their mission of preparing children for disasters.

Although these sites form an important part of the government's preparedness outreach to young audiences, communication scholars have thus far not addressed their content and effectiveness, providing little if any research-based guidance for public information officers who may be tasked with preparedness efforts. Moreover, in the larger public relations literature, surprisingly little research has addressed children as a distinct public. Using stakeholder theory and website usability criteria to conduct a qualitative analysis, this study therefore not only seeks to examine the effectiveness of the three websites in engaging children in disaster preparedness, but also to focus the attention of public relations scholars on children as key publics and stakeholders.

Introduction

Among the many dangers and risks faced by the public, natural disasters have the potential to happen anywhere and affect anyone. However, because resources to overcome disasters are unequally distributed, disasters often pose greater risks to some segments of society (Beck, 1986). Recent disasters such as Hurricane Katrina and the Haiti earthquake have highlighted this unequal risk, especially the needs of children before, during, and after disasters (Corrarino, 2008). Studies show more than 85 percent of American families may be unprepared for an emergency (e.g., Cody, Murphy, & Glik, 2007). In response, the U.S. Federal Emergency Management Agency (FEMA) and Ready.gov, together with the Sesame Workshop and Sesame Street, have launched three child-focused websites to increase disaster preparedness.

Importance of disaster preparedness for children

“Emergency” and “disaster” refer to extraordinary events that require an intense response and often have a negative impact, disrupting “essential services such as housing, transportation, communications, sanitation, water, and health care” and often necessitating “the response of people outside the community affected” (Gebbie & Qureshi, 2002, p. 46). Emergency preparedness then means the capability of individuals, as well as public health and risk organisations and communities, “to prevent, protect against, quickly respond to, and recover from emergencies” (Nelson, Lurie, Wasserman, & Zakowski, 2007, p. 9).

According to Cloudman and Hallahan (2006), a family would be considered prepared if it has an emergency plan, strategies in place such as checklists, has trained or conducted drills, maintains emergency contact lists and

regularly monitors the media. Although scholars and practitioners agree that preparedness is key to positively managing a disaster crisis (Boss, 2002; Coombs, 2007), research shows most Americans are currently ill-prepared for emergencies (Eisenman, et al., 2006; Enarson, 1998; Fothergill & Peek, 2004). Cody et al., (2007) found in their national survey fewer than 15 percent of the participants had set aside emergency supplies or developed emergency evacuation plans or communication plans.

Children are among the most vulnerable in disaster situations. While they may be very aware of the possible impact of natural disasters, they often have little assistance or control in preparing for them or dealing with their fears. In response, government emergency preparedness efforts have addressed this young audience (and by extension, their families) with the development of three “all-hazards”¹ websites, www.ready.gov/kids, www.fema.gov/kids and www.sesamestreet.org/ready. Although each site contains some resources for parents and teachers, children are the target audience for each site and can be considered the primary stakeholders of this outreach, whether or not they are active and aware of the effort.

Government agencies and stakeholders

Although the public relations literature devotes scant attention to children as a target group, like adults, children may be considered *stakeholders* as that term has been established, redefined, and extended over time (Ferguson, 1999; Freeman, 1984; Gregory, 2003; Grunig & Repper, 1992; Jahansoozi, 2006; Jawahar & McLaughlin, 2001; Kolk & Pinske, 2005; Leitch & Neilson, 2001; Rawlins, 2006). Often used interchangeably with the term public,

stakeholder actually implies not just being part of an audience, but having a relationship with an organisation (Rawlins, 2006). For government agencies, building such relationships over time can have a significant positive impact on the communities they serve (Ledingham, 2001; Ledingham, Bruning & Wilson, 1999). Stakeholders have become increasingly visible, vocal and more powerful with the advent of online communications (van der Merwe, Pitt & Abratt, 2005), putting management of stakeholder relations at the forefront of the public relations agenda.

Most scholars agree organisations should distinguish between classes of stakeholders and prioritise organisational resources accordingly (Clarkson, 1995; Rawlins, 2006). Distinctions are sometimes based on stakeholder power (see Clarkson, 1995), demographic and psychographic characteristics of the stakeholder (see Broom & Dozier, 1990, or Grunig & Repper, 1992), or attitudes toward the organisation, situation, or issue (see Grunig & Repper, 1992, and Diers, 2007). The relationship between child stakeholders and government agencies concerned with emergency preparedness might be classified as both normative (e.g., the agencies provide resources children might encounter through a classroom unit on emergency preparedness) and diffused (e.g., periodically, as emergency situations arise or become salient and may transform aware or even latent publics into active stakeholders with a need for dialogue, see Broom & Dozier, 1990). Government agencies may view children as dependent stakeholders, in need of information, assistance or protection (Mitchell, Agle & Wood, 1997) even as they also view them as future definitive or primary stakeholders, who as adult taxpayers or voters will eventually hold some power over the agency’s survival (Clarkson, 1995; Rowley, 2011).

Most of these definitions stress the reciprocal relationship between stakeholders and organisations and the importance of an interactive process of two-way symmetrical communication and dialogue in building stakeholder relationships (Clarkson, 1995; Freeman, 1984; Podnar & Jancic, 2006; Waters,

¹ “All-hazards” refers to the philosophy that basic preparedness is not specific to any single emergency. Making a family communication plan or storing a three-day supply of non-perishable food and water, for example, may be prudent whether the anticipated disaster is a hurricane, an earthquake or a dirty bomb.

Burnett, Lamm & Lucas, 2009), and indeed, such balanced exchange is central to Grunig's Excellence Theory (Grunig, 2008). Two-way communication is easily facilitated on the Internet; such interactivity (as it is usually referred to) is also less expensive than other means of dialogue and can be available asynchronously, around the clock, making online outreach to stakeholders a logical choice for most organisations. In addition to relationship building, such exchanges also enable "publics [to] become participants in constructing the meaning of messages and therefore can provide useful information to public affairs researchers and writers about message impact and message development" (Toth, 1986, p. 31). Indeed, Edelman (2008) suggests that most public relations practice is evolving into this type of public engagement, where messages are informed by decentralised and democratic dialogue that includes all stakeholders. In the context of outreach by government agencies, public engagement is not only broadly important to the future of democracy (Mindich, 2005; Putnam, 2000), it is also considered essential for public health emergency preparedness (Nelson et al., 2007).

However, despite their potential for building public engagement, websites typically reflect the character of the sponsoring organisation (Kent, Taylor & White, 2003). Normatively, government agencies seek public engagement, but dialogic communication has not come naturally to them. Instead, government agencies have traditionally followed a public information model of one-way communication (Grunig & Hunt, 1984). Developed as a voice for corporations and governments to counter muckraking journalists with accurate (although primarily positive) facts, the public information model is well suited to slow-moving bureaucracies, but provides little interaction with the stakeholder and only limited feedback to the communicator, thus squandering the robustness of digital media. Government agencies that do not adapt stakeholder communication to the new, more reciprocal

medium that may establish a "web presence" but fail to build relationships (Witmer, 2000).

Distinct characteristics of child stakeholders

Although children are a 'new' group of distinct and strategic stakeholders in the public relations literature, the fields of advertising and marketing have long acknowledged their importance. Children are not only buyers and consumers themselves who may significantly influence family decisions, but their loyalties, identifications and opinions are at a highly formative stage and once established, often continue into adulthood (Coffey, Siegel, & Livingston, 2006; Diers, 2007; Guber & Berry, 1993; Gunter, Oates, & Blades, 2005; Hansen, Rasmussen, Martensen, & Tufte, 2002; Jacobson, 2008; Kapur, 2005; McNeal, 1987). Public relations practitioners have recognised the importance of child stakeholders; more than 16 percent of award-winning campaigns have targeted children and teenagers (Hardy, 2011). Conventional approaches to understanding stakeholders may apply to children in some cases, yet children also greatly differ from adults in respect to their cognitive, social, and moral development (Baacke, 1995; Nickel, 1979; Piaget & Inhelder, 2004; Selman, 1984; Theunert, 2005). Stakeholder theory suggests an understanding of these differences is essential to communicating strategically with children.

The label 'child' usually refers to a range of age from two to 14 years. However, age is not the sole distinguishing characteristic for a child, because even within a single age cohort children vary greatly in activities, knowledge, and cognitive abilities. In addition to examining age as one possible indicator of differences within this heterogeneous group, it is wise to examine developmental stages such as those proposed by Piaget and Inhelder (2004) and Selman (1984).

According to Piaget, the typical cognitive development of children progressively becomes more abstract and logical (Piaget & Inhelder, 2004). From age two to seven, children move from being egocentric to more socially aware, and from seven to 12 children can understand

operations and procedures as long as they are tied to concrete examples. By age 10 or 11, most children have developed abstract thinking and are better able to understand complex situations and the consequences of actions they take (Piaget & Inhelder, 2004).

The social development of children follows a similar progression: preschoolers are just developing a sense of self, as separate from others; as they grow older, they are able to take on the position of one other person, and by the age 10 or 11 are able to consider many perspectives (Selman, 1984). Children also claim more and more independence, which becomes clear in their moral development: younger children strongly orient their values around the adults in their lives and obey rules without question, but around age 10, children develop an independent value system in which they decide what is right and wrong (Selman, 1984). Additionally, from a network perspective, children both strongly influence, and are influenced by, their family, school, friends, peer groups, and media outlets (Jacobson, 2008).

Children and the Internet

An increasingly important media influence and social network for children is the Internet. From age two to 11, children average nearly five-and-a-half hours online per month, while that number more than doubles for teenagers, who average 11-and-a-half hours per month (Nielsen, 2009). Although children and teenagers spend less time with the Internet than do adults, their comfort with technology is nevertheless very high and they need little assistance to use it successfully (Nielsen, 2009). As of 2009, a report by the Kaiser Family Foundation (Rideout, Foehr & Roberts, 2010) found 70 percent of children age eight to 18 go online daily; 84 percent children do so at home; 36 percent have a computer in their bedroom and 33 percent have Internet access there. Overall in this age group, 93 percent of children have access to a computer at home (Rideout et al., 2010). Closing the small remaining gap, online

materials are accessible to most children across the nation in schools, local libraries, and after-school programs (Rideout et al., 2010). Data on younger children is more difficult to find, but a recent meta-analysis found more than 30 percent of children under five and more than 60 percent of children ages five to nine access the Internet daily (Gutnick, Robb, Takeuchi & Kotler, 2010). With good reason, organisations hoping to address children as primary stakeholders commonly use the Internet as an outreach tool.

Besides being accessible and familiar to children, the Internet lends itself to the development of stakeholder relationships: it is interactive, informal, and provides the opportunity for dialogue not only between organisations and stakeholders, but also among stakeholders, establishing and cementing relationships (Cooley, 1999; Hallahan, 2003; Lordan, 2001; Marken, 1998; van der Merwe et al., 2005). Additionally, the Internet's speed and agility allow – and even demand – that this communication happen in real time (Marken, 1998), making it especially important in a developing crisis or emergency.

Evaluating website content and usability

The Internet, like television, fulfils specific uses and gratifications for the audience (Coffey & Stipp, 1997), including youth audiences (Ferle, Edwards, & Lee, 2000). With a nearly infinite number of websites to choose from, children and teenagers are likely to spend more time exploring sites that best meet their content needs and are easiest to navigate or use – a concept referred to as usability (Hallahan, 2001; Peng & Logan, 2005). Accordingly, usability by the target audience should be an essential step in the audience analysis that precedes creation of a website. Although in the best of all worlds, a child is using the Internet with adult assistance, a British study showed one in six children aged 5-7 and one-third of children aged 8-11 typically use the Internet without adult supervision; therefore children themselves, and not their adult caregivers, should be considered the target audience in usability planning for children's websites (UK

Children's Media Literacy Interim Report, 2009).

As the Internet matures and more attention is focused on new technologies like social media, fewer website usability studies are being published; however, usability has been defined consistently over time in the literature. Such characteristics as navigability, accessibility, customisation or relevance to the user, ease of use, and speed of download are usually named as important criteria (Pearson & Pearson, 2008). Other best practices for public relations practitioners utilising the Internet include frequent content updates (Lordan, 2001), opportunities for user interactivity (Jo & Yungwook, 2003), and constant improvements in website functionality and design as technology advances (Marken, 1998; Springston, 2001).

Usability problems often interfere with access to content (Guild, 2004) and directly impact whether a user will linger on a website, return to it, or refer friends (Peng & Logan, 2005); usability may also be especially important for those with less Internet experience, including children (BPB, 2001). According to Cook, Rule, and Mariger (2003) four characteristics of user-friendly websites include: 1) ease of navigation; 2) pages that require little or no scrolling; 3) consistent and understandable design, compatible with all computers and browser types, which uses common conventions like placement of navigation buttons on the left (Cook et al., 2003; Grahame, Laberge, & Scialfa, 2004); and 4) easy-to-remember domain names. Guild (2004) found sites relying heavily on Flash, Shockwave, or Virtual Reality Markup Language technologies forced users to download many of these programs, often precipitating pop-up warnings about security issues. Inexperienced users are less likely to download these technologies and might therefore not be able to see the content of the homepage. Eighmey (1997) also found that if a web page integrates technologies or enjoyable elements that need time to download, the page should offer images or entertainment while users are waiting.

Organisations should avoid the temptation to use bright and playful homepages that will take a long time to load (Eighmey, 1997). Lean websites that offer the most important information on the first page and are easy to navigate fare better in user satisfaction surveys than more elaborate and cluttered counterparts (Kent & Taylor, 2003).

When it comes to website usability specifically for children, one of the most comprehensive checklists comes from a recent two-year study at the University of Leipzig (Rosenberger & Warkus, 2010; Seitenstark, n.d.). Researchers used quantitative surveys, participant observation, and qualitative in-depth interviews with children aged eight to 13 to determine how children navigate through a website, which content is of interest to them, and which usability features can best assist navigation. Six usability categories emerged in the Leipzig analysis: provider, audience, content, navigation, communication, and layout (Rosenberger & Warkus, 2010; Seitenstark, n.d.).

In our current study of disaster preparedness websites for children, we combined the Leipzig usability criteria with best practices in web-based public relations, then added key elements of stakeholder and child development theory, to address the following research questions:

RQ1: Does each of the three disaster preparedness websites distinguish among children as stakeholders at different stages of involvement and development?

RQ2: Do the three websites provide two-way communication for children as stakeholders?

RQ3: Do the three websites fulfil usability characteristics adequate for the unique stakeholder group of children?

RQ4: Do the three websites help the government fulfil its goal of increasing disaster preparedness of children?

Methodology

To best answer the research questions we decided to utilise a qualitative content analysis drawing on the literature review of child development, stakeholder theory, and

children's website usability criteria. The main goals of using content analysis are description, hypothesis testing, and facilitating inference (Mayring, 2000). In this study the main goal is the first, description, which provides insights into public discourse and popular culture represented in the media (Macnamara, 2006).

Sample

Our analysis focused on the U.S. government's three disaster major preparedness websites for children: FEMA for kids (<http://www.fema.gov/kids/>), the child's version of the Federal Emergency Management Agency website; Ready Kids (<http://www.ready.gov/kids/home.html>), the child's version of the Ready.gov website created by the Department of Homeland Security; and Let's Get Ready! (<http://www.sesamestreet.org/ready>), a government-commissioned initiative of Sesame Workshop, producers of Sesame Street. All three websites technically fall under the jurisdiction of the U.S. Department of Homeland Security and its subsidiary FEMA, and all reflect the recent trend toward "all-hazards" preparedness, rather than focusing on a single threat (Hodge, Gostin, & Vernick, 2007). All three websites were analysed in their entirety during the week starting March 25, 2010.

Qualitative content analysis offers the opportunity to capture "the context in which a media text becomes meaningful" to its publics (Newbold, Boyd-Barret & Van Den Bulck, 2002, p. 84) and is especially useful to analyse audience interpretations based on their characteristics, such as demographics. As this analysis seeks to understand the context in which a specific public may be able to use the Internet to prepare for emergencies, a qualitative content analysis is best suited to achieve this goal (Macnamara, 2006). Although we used previously-established categories for analysis, the thematic and descriptive coding of content suggested the appropriateness of a qualitative approach; in keeping with accepted practices

of inductive reasoning, we left open the possibility of including additional findings and creating new categories if necessary (Corbin & Strauss, 2008). Given our inclusion of public relations best practice literature and stakeholder theory, selecting a qualitative approach provides an opportunity to test the usability criteria in this new context.

To ensure data quality, all websites were initially coded separately by two researchers, who then intersubjectively verified the validity of interpretations through discussion and comparison of their findings (Corbin & Strauss, 2008). Both researchers are knowledgeable about child development theories, public relations, and disaster literature. In a final step, the third researcher, an expert in child and media studies, analysed and evaluated the findings. Through a final discussion the results were recorded to answer the research questions.

Instrumentation

This analysis relied on the six usability categories developed by the University of Leipzig: 1) *provider*, including ease of identifying and accessing a home page and whether it captures the intent of the organisation; 2) *audience*, including whom the organisation wants to reach and what its interests or needs are; 3) *content*, a broad category with several sub-categories including whether the topics are appropriate, whether there is too much or too little entertainment and information, and whether there are significant omissions, plus whether the information is kept updated in a timely way and whether links are appropriate, working, and do not lead away to unrelated pages; 4) *navigation*, including the content of the links and the way they function, such as whether a link opens a new window and how easy it is to find a way back, in addition to the amount of scrolling necessary to read text; 5) *communication*, including the number of opportunities for "activity," such as downloads, votes, and games and whether these achieve the main function of the site, and "interactivity," such as opportunities like email, discussion boards, reviews and other ways for the user to communicate with the homepage sponsor, other

users, or both; and finally 6) *layout*, including design issues such as images, colours, clutter, sound and appropriateness for the target audience, and whether these characteristics enhance or hinder the user experience (Rosenberger & Warkus, 2010; Seitenstark, n.d.).

During the analysis of the second category, audience, we assessed how well each website addressed stakeholder characteristics such as reading ability and cognitive development. For criteria three through six, additional website usability characteristics from public relations literature were included, such as the speed of updates on the website, the ease of navigation, and interactive communication with stakeholders. Our presentation of results follows the six Leipzig usability categories, with public relations-specific analysis integrated within.

Results

Provider. Our study evaluated the ease of finding each website and accessing its home page, as well as the general impression the sponsoring organisation conveyed to its stakeholders (see Table 1). Given that a site might be reached purposefully and directly by typing in its URL, this was the first type of access examined. A second way a potential user might find these sites is through a topic search on a search engine such as Google, hence multiple sample search strings were employed.

Active or aware stakeholders may purposefully seek the sites by typing in the website address. While the URLs of the three sites are not overly complex, they must be typed exactly in order to reach the sites – no alternative URLs such as fema.gov/children, fema.gov/child or fema.gov/kid have been reserved and set up to redirect users to the correct domain name; instead, getting the name slightly wrong results in a generic browser error message.

A second common way in which children might find their way to these websites would

be through a search engine; we therefore tried the effectiveness of numerous search combinations including specific types of disasters alone, as well as combined with words such as ‘kids’ or ‘prepare’, with mixed success. The top 10 search results for ‘thunderstorms’, for example, did not include any of the sites, although the seventh of 10 responses to ‘thunderstorms prepare kids’ did include a link to a PDF of a classroom activity created by Ready Kids and designed for a teacher audience; however, the same combination using ‘children’ instead of ‘kids’ produced none of the three sites. We searched for other specific disasters such as ‘earthquakes’, ‘hurricanes’ or ‘tornados’ in combination with ‘prepare’ and either ‘children’ or ‘kids’. For each of these six combinations, we examined the top 10 search results and found the sites listed only three times; none of the three sites were among the top 10 results when searching for tornado preparedness. Combinations such as ‘disasters prepare children’ or ‘disasters prepare kids’ were successful in bringing up the Ready Kids and FEMA homepages, but not the Sesame Street site. However, if ‘kids’ or ‘children’ were replaced in the ‘emergencies’ and ‘disasters’ searches with a specific age, such as ‘ten-year-old’, neither site appeared in the results.

By making content difficult to discover and access for young web users who may be less familiar with their organisations or with preparedness issues, the three websites have failed to consider the developmental and involvement levels of these stakeholders as indicated in RQ1 (‘Does each of the three disaster preparedness websites distinguish among children as stakeholders at different stages of involvement and development?’ referred to hereafter as stakeholder stages). They have also failed to meet criteria referenced in RQ3 (‘Do the three websites provide two-way communication for children as stakeholders?’ referred to hereafter as website usability).

Table 1. Summary results of provider category analysis

Sesame Street	Ready Kids	FEMA
<ul style="list-style-type: none"> • Accessed directly at www.sesamestreet.org/ready or via link from Ready Kids • Sesame Street characters appear under the banner “FEMA Ready Kids” and the Department of Homeland Security seal. • Links take users to proprietary Sesame website, no longer branded by FEMA • Further links take users to unrelated Sesame pages • Difficult to find sponsorship info 	<ul style="list-style-type: none"> • Accessed directly at www.ready.gov/kids or link from www.ready.gov • Home page identifies both “Department of Homeland Security” and “FEMA Ready Kids.” • “About Ready Kids” link on each page 	<ul style="list-style-type: none"> • Accessed directly at www.fema.gov/kids or via “kids” link on FEMA.gov. Name appears on every page • Many links to learn more about FEMA, DHS and dhs.gov • Links lead to agency website content for adults, not kids

Audience. Each site was evaluated for whether it appeared to have a clear target audience of stakeholders and whether it took the audience’s interests as well as cognitive abilities into consideration (see Table 2). None of the three sites indicates ages at its access point, nor presents other cues to clearly differentiate

content by user characteristics or information needs. It would not be clear to a user of one of the sites if more age- or need-appropriate material could be found on one site versus another. Again, the three websites fail to meet the standard for targeting the needs of stakeholders in RQ1 (stakeholder stages).

Table 2. Summary results for audience category analysis

Sesame Street	Ready Kids	FEMA
<ul style="list-style-type: none"> • Intended audience: portal page Ready Kids link states 4th and 5th graders • Intended audience not indicated on Sesame site • Use of characters implies pre-school age target • Content not explicitly differentiated from other FEMA sites 	<ul style="list-style-type: none"> • Intended audience stated on “About” page: 4th and 5th graders • Content not explicitly differentiated from other FEMA sites 	<ul style="list-style-type: none"> • Intended audience: link provided “for the little ones” implies at least two stakeholder age groups • “Little ones” content is simply a sampling of content for “older ones” • Amount of text and type of content suggest an audience with age 8+ reading ability and age 10-11+ abstraction ability • Photos of disaster devastation and higher level text not filtered in “little ones” content

Content. Content (see Table 3) was evaluated for appropriateness of topics (RQ1, stakeholder stages, and RQ4: ‘Do the three websites help the government fulfil its goal of increasing disaster preparedness of children?’ referred to hereafter as preparedness goals): mix of entertainment and information (RQ1, stakeholder stages); and significant omissions and timeliness of updates (RQ3, website usability). The appropriateness of links was also evaluated (RQ1), as well as whether the links led the user away to unrelated pages (RQ1 and RQ3). Two-way communication (RQ2,

‘Do the three websites provide two-way communication for children as stakeholders?’ or website usability) was also examined within this category.

Again, the sites failed to provide affirmative answers to our research questions. On all three sites, games and activities were static and provided little feedback; information was seldom updated, and it was easy to be led away to unrelated or adult-targeted sites. Neither Sesame Street nor Ready Kids provided concrete consequences or motivations for disaster preparedness. While FEMA had the

most effective content related to disasters and preparedness and came close to a positive answer for RQ4 (preparedness goals), its failure to differentiate the needs of child stakeholders

and provide opportunities for engagement undermined the chances that its content would lead to greater disaster preparedness.

Table 3. Summary results for content category analysis

Sesame Street	Ready Kids	FEMA
<ul style="list-style-type: none"> • All content is video with captioning • Content includes a 16-minute main video about preparedness featuring Grover • Two 30-second PSAs on emergency kits and knowing your name • One four-and-a-half minute “Fairy Tale News Report” re-telling story of three little pigs in context of the emergency preparedness. • No games or interactive elements • All links redirect users to unrelated sections of Sesame site • Emergencies described abstractly “when something happens that you don’t expect and you have to be prepared.” • No actual disasters or emergencies mentioned nor are their consequences. • Main video begins with an anti-piracy warning and a full 30 seconds of sponsorship slates • Content is static and does not reference current events 	<ul style="list-style-type: none"> • Includes both educational and entertaining content • Cartoon family of anthropomorphic mountain lions prepares for emergencies • Kids encouraged to gather supplies, make a family communication plan and “know the facts” about emergencies such as tornados, earthquakes and terrorism • Games include simple word searches, crossword puzzles with clues from the website content such as “_____ light: A handy tool to have if the lights go out!” • Activities for kids and families include scavenger hunts and filling out family communication plan • Content-based test to “graduate from Readiness U” • Never discusses disaster consequences such as injury or destruction • Links to resources lead to adult-focused sites • Downloadable colouring pages • Sesame link does not indicate how content differs 	<ul style="list-style-type: none"> • Includes many pages of in-depth information about disasters and disaster preparedness • Search function, email link and parent links on every page • Includes games, quizzes colouring pages, puzzles and other activities • Sections include “Kids to Kids” and “What’s Happening Now?” • Explains disasters, natural disasters and terrorism, including earthquakes, floods, tsunamis, wildfires, winter storms, volcanoes, tornados, hurricanes, earthquakes, and thunderstorms • “Get Ready, Get Set” teaches children about disaster supply kits, how to protect their homes and pets, what they may feel during a disaster, and what other actions they can take to prepare. • “Games & Quizzes” tests disaster knowledge and preparation with crossword puzzles, quizzes and colouring pages • Correct answers require careful reading but convey title of “Disaster Action Kid” • The button “What’s Happening Now?” leads to U.S. map with pop-up windows about “current” disasters but some are more than six months old • Users must go 5-6 clicks deep into the website for content • “Games & Quizzes” includes the Y2K non-disaster of 2000 • Some links connect to adult-targeted websites

Navigation. In direct response to RQ3 (website usability) the three sites were evaluated for navigation, including the content and functionality of the links. This includes whether a link opens a new window, the ease of getting back to the main page from a link, and the amount of scrolling necessary to read text (see Table 4). All three were characterised by technology glitches or outdated technology. Navigation produced some surprises on the

three sites: users could easily click and find themselves on pages unrelated to disaster preparedness, or sites designed for adult users such as the Drug Enforcement Administration (DEA) or the Federal Bureau of Investigation (FBI). FEMA’s navigation and user controls were especially clunky and inconsistent; users of the FEMA site also needed as many as four additional downloads such as Windows Media Player to utilise content.

Table 4. Summary results for navigation category analysis

Sesame Street	Ready Kids	FEMA
<ul style="list-style-type: none"> • Consists of only two pages: portal and one page of video content • All other links promote Sesame Street programming, with no mention of disaster preparedness • Video slow and jittery on multiple occasions even with hi-speed access • Link for “low bandwidth users” led to unrelated Sesame Street games 	<ul style="list-style-type: none"> • “Splash page” with Flash animation • Older-style Flash animation for many games and activities • Mouse-over navigation bar • Many pages require download of Flash or Acrobat Reader • Links such as “Know the Facts” section lead away from the site (without warning) to other organizations, including the FEMA Kids, the U.S. Fire Administration for Kids, the DEA, EPA, FDA and FBI 	<ul style="list-style-type: none"> • Most layout and navigation were inconsistent page to page • A parent/teacher link from the first page disappears on other pages • Navigation bar may be left, right, bottom or split • Browser-forward and back- buttons required to change pages, often needing many backward clicks • Some links open pop-up windows, others new windows • Significant scrolling often needed • Needs Flash, Acrobat Reader, Real-Player and Windows Media Player (not compatible with all Macs) • Sounds on some pages delay page loading without explanation to user

Communication. This category evaluated the number of opportunities for ‘activity’, (such as downloads, votes, and games and whether these achieve the main function of the site) as well as ‘interactivity’ (such as email, discussion boards, reviews, and other ways for the user to communicate with the homepage sponsor, other users or both). Activity corresponds to meeting the needs of stakeholders (RQ1) and interactivity relates directly to RQ2 (two-way communication). The three websites fell short

on RQ1; on RQ2 they failed miserably (see Table 5). Sesame Street provided a mostly passive experience; Ready Kids had games and activities, but the most meaningful were designed to be done with other people in person; other games were limited in scope and never-changing. FEMA’s games and videos were also static. None of the websites allowed for easy, direct communication with experts, webmasters, or other kids; two required children to have their own email addresses.

Table 5. Summary results for communication category analysis

Sesame Street	Ready Kids	FEMA
<ul style="list-style-type: none"> • Only activities are passive videos • Opportunities for dialogue hard to find • “Help” links to “Contact Us” which in turn brings up a form to allow email interaction • “Gary’s Blog,” written by “Big Bird’s boss,” permits no comments, reader posts or forwarding • No opportunity provided for interaction with other users • No feedback from games or activities about preparedness 	<ul style="list-style-type: none"> • Games were brief and unchanging, no reason for repeat visits • Few two-way elements. • Games and activities provide automated feedback (e.g., “Graduate from Readiness U”) • Some activities such as Scavenger Hunt are designed to be done with family members • Links to address, phone number and generic email • No opportunity for dialogue • No opportunity for interaction with other site users • Email requires child to have own account 	<ul style="list-style-type: none"> • Games, video static and outdated • No kid-to-kid communication • No IMs, social media or discussion forums • Pop-up redirects to FAQs, discouraging email • Kids must have MS Outlook and their own email address • Telephone and snail mail only connection to FEMA • “Disaster Connection” shares pictures and stories of real children in disasters, but posts are not interactive or instant • “Order FEMA Stuff” links to phone numbers and addresses where FEMA publications can be ordered.

Layout. All three sites were examined for aesthetic details including images, colours, clutter, sound, and appropriateness for the target audiences, corresponding to the needs of

stakeholders (RQ1) and overall website usability (RQ3). Neither research question could be answered affirmatively. As reported in Table 6, when the sites were compared with

other contemporary children’s websites, design elements were outdated, inconsistent, and amateurish on the Ready Kids and FEMA sites; Sesame Street’s design was superior but was

branded with the Sesame Street look and feel, with no indication of its actual government sponsorship.

Table 6. Summary results for layout category analysis

Sesame Street	Ready Kids	FEMA
<ul style="list-style-type: none"> • Bright clean colours • Easy to read • Video frame • Time-code on videos • Sesame Street branding, not FEMA 	<ul style="list-style-type: none"> • Bold colours • Easy to read • Sound on splash page • Left navigation bar • High resolution art • combined with clip art 	<ul style="list-style-type: none"> • Bright yellow background • Harsh colours • Clip-art style mascot “guide” appears inconsistently • Inconsistent formatting • Inconsistent fonts with heavy use of Times New Roman

Discussion

Online tools are a cost-effective, highly accessible way to reach children with critical public health and safety messages about disaster preparedness. However, in a crowded marketplace of enticing options for children, a poorly executed website cannot compete.

Our study examined three major government-sponsored disaster websites targeted at children, evaluating the following: whether content was appropriately tailored to the varying developmental stages and needs of child stakeholders; whether the sites provided two-way communication with these stakeholders; whether they achieved basic website usability characteristics of design, speed, and functionality; and whether they fulfilled the goal of increasing disaster preparedness of children.

Overall, we found the three websites to be inadequate in meeting these basic criteria. All three suffered from outdated design, content, and technology – the equivalent of a dial-up connection in a high-speed wireless world. Communicators at FEMA and its partners should strongly consider reworking the design of these websites to incorporate state-of-the-art best practices and technologies, as well as content that is useful, informative, and entertaining to the diverse group of child stakeholders they hope to reach.

While an active stakeholder and savvy Internet user might be able to purposely navigate to one of the three sites evaluated in

this paper, it might prove more challenging for a child with less knowledge, engagement, and experience. For example, while the addition of ‘/kids’ to the Ready.gov URL or ‘/ready’ to the SesameStreet.org URL is a fairly simple one, it may be challenging for novice web users to remember and correctly type the ‘forward slash, kids’ suffix or find the forward slash key on a computer. Purchasing alternative URLs that can be directed to the same website is a low-cost best-practice, so it surprising that FEMA has not purchased the URL www.readykids.gov or www.sesamestreetready.org for this purpose.

Many children surf the web without parental supervision, and therefore may be the ones conducting such a search. According to Bumpus and Werner (2009), parents take a variety of measures to monitor and regulate children’s Internet usage, but some studies indicate relatively little monitoring and use of parental controls (Rideout et al., 2009). Parents setting traditional and technology specific Internet rules may monitor and check websites before children access them but those with few or passive rules tend to monitor and manage their children’s Internet usage less. Furthermore, families from a lower socioeconomic background display lower levels of media protectiveness strategies (Power & Hill, 2008); simultaneously, Hispanic and African American children, as well as those from lower socioeconomic backgrounds, are the biggest consumers of media across all types (Gutnick et al., 2010). These findings suggest that increasing the accessibility of the disaster

websites may be especially helpful to children in households where they may not receive monitoring or help from their parents.

An 'aware' or 'latent' child stakeholder might have considerably more difficulty accessing the content on these sites, because the failure of the sites to appear consistently in search results indicates they may not be sufficiently search engine optimised. Given that children are novices at constructing search strings, there should be many more key words to help search engines find the materials. The static nature of the sites also contributes to their failure to appear in searches; one recommendation would be to include more information on current emergencies and disasters so that child stakeholders who are activated by a current event would be more likely to discover the sites in search results; this current events area could then contain plentiful links to the principles of preparedness found elsewhere on the sites' other pages.

Additionally, the failure of the three sites to explicitly name consequences and outcomes of disasters is a serious omission that may fail to engage most users in the importance of emergency preparedness. First, it removes any sense of urgency that could motivate preparedness behaviours. Second, talking generally about emergencies and the importance of preparing for them is far too abstract for young children whose developmental stage may still demand concrete examples. There is, however, a balancing act; a younger child might be frightened, for example, by a picture of tornado destruction, underscoring the need to understand diversity among children and direct them to developmentally appropriate content. Third, by presenting preparedness as a rule and not a choice or behavioural decision (albeit the right decision), it fails to take advantage of what we know from Piaget (2004) about the developing moral compass of 10-year-olds who are beginning to question rules and develop values independent from their parents. Fourth, the content also omits opportunities to communicate, collaborate, and/or compete with peers, an increasingly important developmental stage for the stated target audience of at least

one of the websites, Ready Kids, designed for fourth and fifth graders. Ryan, Hocke, and Hilyard (2010) analysed the content of these three websites using the Extended Parallel Process Model and found that the websites lack in combining fear appeals with self-efficacy messages. Therefore, the authors suggest that the websites fail in providing a reason for preparedness and the self-efficacy for the children to actually take preparedness actions.

Although the federal government underwrites all three preparedness websites examined in this paper, its central disaster preparedness portal, Ready.gov, directs 'kids' only to the Ready Kids site, implying that this content is both comprehensive and designed for all ages. Yet from the analysis, it is clear that each of the three websites targets a slightly different audience and could perhaps do an even better job of tailoring content to children of different ages and/or developmental stages. Eliciting some information from younger users at the outset – such as their age, grade, or even general level of knowledge, might provide a means by which the user could then be directed automatically to the most appropriate content. Likewise, the central Ready.gov portal could feature a mouse-over menu when a user places the mouse over the 'Ready Kids' button – then allow kids to essentially place themselves in an age group or knowledge level.

Because none of the three sites provided a clear indication on its homepage of the age of the intended target audience, this must be implicitly derived from the content itself. Sesame Street fans – primarily pre-schoolers – would likely identify with the characters there. But it is questionable whether the fourth and fifth grade audience that the Ready Kids website apparently intends to target would respond well to the imaginary family of mountain lions that is central to the site. And the confusing mix of materials for different age groups on the FEMA website makes it unclear exactly for whom the site is intended. This is especially curious, since the existence of three separate sites implies three separate stakeholder groups. Given that all three websites are ultimately sponsored by the federal government, there should be a coordinated

effort to address every age group clearly, appropriately and adequately, with little overlap or duplication and with a planned progression for children to move from one site to another as they move from one developmental stage to the next.

Although their primary target audience is the child stakeholder, all three websites make an effort to provide materials targeted at adults. FEMA provides a separate page for parents and educators—ready.gov—which offers materials for educators on its children’s website, and Sesame Street seems to address both children and parents (Ryan et al., 2010). Although not the focus of the analysis here, it may be helpful to address parents as a separate or connected public of children in future research.

Another significant drawback is the static nature of all three sites, which appear to have no regular opportunities for updates built in and no reference to current events. More frequent updates and responses to current crises that have primed children for interest in disaster preparedness might encourage the intended audience not just to visit once, but to return to the site as they progress through their emergency preparedness process.

The public relations literature resoundingly recommends two-way symmetrical communication as a tool for building stakeholder relationships, but opportunities for interactive dialogue on all three sites are quite limited. Even young children with access to the Internet rarely have their own email accounts; they may be reluctant or unable to pick up the phone and call an impersonal government hotline. The unwieldy and less-and-less common experience of writing a letter and supplying it with adequate postage may be too challenging for some kids. Online media is increasingly defined by its social nature, but rather than building connections with kids and among kids, these three sites isolate and silence child stakeholders.

In general, all three sites compete very poorly with current online offerings for children, both free and subscription-based. For example, preschoolers and young elementary school children can play games and guide avatars through virtual worlds at sites such as

Webkinz, PBS Kids, Disney Channel, Jump Start World, and numerous other websites available to kids. By comparison, clunky Flash technology and clip art is simply is not captivating; content that never changes does not attract repeat visits to the site.

Certainly, the traditional dependence of government agencies on the public information model may be responsible for some of the shortcomings found on these three websites, particularly where issues of interactivity are concerned. And it may not seem surprising that government bureaucracies would be less-than-agile in producing updated content or cutting-edge graphics. But removing those portions of our study, there remained significant problems in two areas: 1) analysing and meeting the needs of child stakeholders and 2) website usability. Failure to engage the target public and poor production or execution of a media strategy are not new problems; both potentially plague any public relations model and predate the existence on the Internet. Most problematic in this case, they are obstacles to public engagement that potentially hinder the public’s emergency preparedness.

Government officials already know the power of an effective virtual experience – America’s Army, developed by the U.S Army as a recruitment tool, not only proved successful for training and managing expectations of both new and seasoned recruits, but also was wildly popular with the public. It is now in its 26th edition, with both mobile and Xbox versions. Likewise, the federal government hosts numerous highly effective informational websites for adult citizens, such as www.cdc.gov, and many agencies have made successful forays into social media such as Twitter, Facebook, and YouTube (see, e.g., the CDC’s edgy and fun “zombie apocalypse” emergency preparedness message, Greene, 2011). These are examples of best practices in digital outreach and engagement that must be shared with all agencies, no matter their mission and stakeholders, because without such adaptation, government agencies still engaged in one-way communication according to the public information model risk losing audiences

and share of voice in an era when dialogue and interaction have become the norm.

Conclusion

Whereas this analysis may appear limited in its descriptive and exploratory approach, it builds a foundation for future research. Two researchers analysed and catalogued the sites to determine how well they fared in certain usability categories, with a focus on addressing the needs of child stakeholders. Approaching usability studies from this perspective provides a comprehensive overview of the content, problem areas, navigation, and layout. It cannot, however, give insight into actual usage by children. Based on practical knowledge and theoretical underpinnings about the abilities of this age group, however, we can nevertheless provide recommendations for best practices.

In general, all three websites address an important issue, disaster preparedness for children, and have done this as Internet pioneers. But although early to the Internet platform with these websites (at least one of which still anticipates the Y2K 'crisis' of 1999, and therefore predates it), the three sites have allowed their content and technology to become static and stale, while remaining stuck in an increasingly outdated one-way communication model. In order to compete and reach key stakeholders, more needs to be done to captivate and hold the interest of children. Future research should address how children use websites such as these, how they understand and use the material, and what should be improved from their perspective. Indeed, this is research that practitioners must conduct as the first step in the public relations process to redevelop these sites. Only by engaging in dialogue with children, the intended stakeholders, can the government adequately develop stakeholder relationships that will improve the disaster preparedness of children and their families.

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