

Digital Storytelling in a Web 2.0 World

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Abstract: Digital storytelling has arisen as a form of narrative expression that is crafted into a media production. While there appears to be general agreement that digital storytelling integrates meaningful stories with media, and characteristics of digital stories have been described, the definition of and purpose for digital storytelling remains somewhat open to interpretation. Even more unclear is how the growing array of interactive Web 2.0 video-sharing technologies are being used to facilitate digital storytelling. This paper presents a pilot study conducted to begin learning how digital storytelling is manifesting on YouTube, which is currently the most widely used of all video-sharing services. A relevance sample of 100 digital stories was obtained from YouTube. The videos were analyzed to determine how closely they match published characteristics of digital stories and to what extent interactive features of YouTube were utilized. Results indicated variation among the stories in terms of adherence to the classic model and the media elements used. Interactive tools such as ratings, comments, and video responses were used, but not extensively.

The Changing Nature of Digital Storytelling

Digital storytelling, in the most general sense, is the process of creating a story with digital media such as images, text, music, and audio narration. However, a precise definition of the term is elusive. This is because the term *digital storytelling* tends to undergo shifts in meaning depending on factors such as context, audience, purpose, and philosophical stance. Among other things, digital storytelling has been described as the art of creating a short movie based on a meaningful personal narrative (Davis, 2004; Lambert, 2007). It has also been discussed as an educational tool that can be aligned to standards for technology and language arts (Ohler, 2008) or as a way of framing the process of portfolio development and the assessment of deep learning (Barrett, 2004). These varied shades of meaning pose a challenge for researchers due to the lack of agreement about what actually constitutes a digital story. Because of this, the starting point for the study described in this paper was to identify a set of defining characteristics

for digital stories within the context of the Web 2.0 video-sharing service where they were hosted. While the selected characteristics may not encompass all possible definitions of digital storytelling, they serve to reduce ambiguity and provide an entry point for exploration.

Characteristics of the Classic Digital Story

The phrase *classic digital story* is used in this paper to describe the model originating from the *Center for Digital Storytelling* (<http://www.storycenter.org/>), which offers training and workshops to teach digital storytelling techniques. A classic digital story takes the form of a personal narrative presented as a short movie using a series of images, first-person audio narration, and sometimes a music sound track. This style of digital story is emphasized in the *Digital Storytelling Cookbook* (Lambert, 2007). This manual serves as a good starting point when delving into the nature of digital stories and the manner in which they are produced as digital media. The cookbook describes several types of personal stories that can be developed in media format. These are listed in Table 1.

Character Stories	Meaningful relationship with someone we love or have been inspired by.
Memorial Stories	Remembering those who have passed.
Adventure Stories	Travel and personal adventures.
Accomplishment Stories	Achievement of goals or life milestones.
The Story About a Place in My Life	A place that has personal meaning.
The Story About What I Do	Profession, work, hobby, and career stories.
Recovery Stories	Overcoming a life challenge.
Love Stories	Love relationships and meaningful partnerships.
Discovery Stories	The process of learning or uncovering information.

Web 2.0 Video-Sharing for Digital Stories

Since digital stories are short movies they are suitable for hosting on sites like YouTube, which currently imposes a 10 minute duration limit on video uploads. Web 2.0 video-sharing services have exploded across the Web since the creation of YouTube in 2005. Digital stories and video-sharing are a natural fit. Users can upload their videos to be hosted at YouTube, share them with others, and interact through comments, ratings, or video responses. This adds a level of interactivity to digital storytelling that was more difficult to achieve, and far less ubiquitous, prior to the onset of free video-sharing. An array of specialty video-sharing services have emerged in recent years to cater to specific user groups. Among these is the *Story Circles* video-sharing site (<http://www.storycircles.org/>), which has functionality similar to YouTube. Here users

can upload their digital story movies, search for other stories, post comments, rate videos, and browse by category. Given that the site is hosted by the Center for Digital Storytelling, the majority of stories posted there are more likely to assume the more classic form taught in their workshops. However, it should be noted that this may not always hold true.

An interesting question arises regarding the form digital stories will take when generated by YouTube users who may or may not adhere to the classic model. This may reveal the need for a broader taxonomy to more fully describe the spectrum of digital stories currently being produced. Furthermore, the expansion of digital stories into Web 2.0 video-sharing sites may lead to additional shifts toward a more engaging interactive model. Ohler (2008) explains that the future of digital storytelling will include short movies, such as those on YouTube and that Web 2.0 will facilitate "...interactivity and participation locally and at a distance, allowing students to share and collaborate on digital stories" (p. 40). Bull (2008) notes the proliferation of free browser-based Web 2.0 tools that are available for storytelling, which supports the feasibility of this idea. Currently, there is a transition from the view-only format commonly found in the past when support for commentary or community-building around digital stories was not as readily available. A good place to begin investigating the current manifestation of digital stories within interactive video-sharing sites is to start with the biggest one of them all. YouTube (<http://www.youtube.com>) is consistently listed as the largest and most highly used of all video-sharing sites (Comscore, 2007; Nielsen Online, 2008). A pilot study, designed to begin exploration of digital stories on YouTube, is described next.

Methodology

This pilot study was conducted as an exploratory investigation designed to obtain descriptive information about the current manifestation of digital stories on YouTube. The research questions are as follows:

1. How closely do digital stories posted on YouTube align with the classic model?
2. How are the interactive tools (comments, video responses, ratings) being used?

Research Design

A content analysis research design was used for this pilot study. According to Krippendorff (2004), "Content analysis is a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use" (p. 18). Traditionally, the methodology has been used to study written materials in text form such as newspapers or historical documents. Krippendorff's definition is more inclusive so that "...works of art, images, maps, sounds, signs, symbols, and even numerical records may be included as data—that is, they may be considered as texts..." (p. 19). Within this definition, digital stories can be conceptualized as a "text" that can be studied

through content analysis methodology. The definition also introduces the idea of context and its role in understanding the meaning of texts. The context for the present study is the YouTube video-sharing site. The purpose is to identify trends or patterns in the data so that the research questions may be answered.

The first step in this study was to identify units of analysis that would enable categorization of the attributes of a sample of digital stories. As a starting point, a set of attributes common to the classic model of digital stories was used to create a set of categories for coding purposes. This followed a process similar to the one used by Snelson (2002) when analyzing the content of Websites designed to teach mathematics online. The categories used to code the sample of digital stories were clustered in groups for story, media, or interactive Web 2.0 attributes. These are listed in Table 2. An additional category for general comments and observations was used to record anything of interest that did not fit within the coding categories, but this was not included in Table 2.

<i>Attributes</i>	<i>Description</i>
<i>Story Attributes</i>	
Type of Story	The story is either one of the 9 types of personal story described in the <i>Digital Storytelling Cookbook</i> , or as a type not specified in that document.
Perspective	The viewpoint of the narration (first person or other).
Topic	What the video was about.
<i>Media Attributes</i>	
Media Style	Mmedia elements used (i.e., images, voice narration, text, video, music).
Duration	The play length of the digital story video.
<i>Interactive Web 2.0 Attributes</i>	
Comments	Number and type of comments made on the video.
Star Ratings	Number of ratings and star average (1 to 5 stars).
Video Responses	Number and type of videos posted in response to the digital story.
Number of Views	Total number of views in YouTube.

Sampling

Sampling from the Web is problematic and does not fit readily into standard models. The ability to capture a true random sample from a collection of Web pages or YouTube videos cannot be done with certainty. This is due in part to content that is regularly updated, uploaded, or removed so that the population is in continual flux. Search engines are used to locate content fitting specified criteria, but limit accessibility to a percentage

of the top number of search results. For example, a page barrier on Google limits access to the first 1,000 results (Google, 2008). Because of this, it is not possible to obtain a random sample of all pages that match the search criteria. YouTube results work in a similar restrictive manner when the result count is high. However, a basic search returns results that are ranked by relevance according to the algorithms used in the search engine. This being the case, a portion of the top results should, at least in theory, be the most appropriate sample of Web-based content matching a set of research criteria. This is a purposeful type of sampling similar to what Krippendorff (2004) refers to as relevance sampling. In other words, the search results at the top of the list should be the most relevant to the search criteria.

Because of the limitations of sampling just noted, a relevance sample approach was used in this study. The top 100 results from an advanced search in YouTube constituted the sample of digital stories obtained for analysis. This sample size was selected based on the study by Anselmo, Lash, Stieb, and Haver (2004). Their study of cystic fibrosis information on the Internet used a sample of the first 100 results out of 186,000 obtained from a Google search. In the present study, the first 100 digital stories out of a total of 305 were sampled, providing approximately the top 30 % of all stories matching the search criteria. The advanced search in YouTube was used to generate a list of the most cohesive set of digital stories related to education available. The search criteria are shown in Figure 1. It should be noted that YouTube users select or create their own search tags, video titles, video descriptions, and category for the video to be listed under. Videos were search for the exact phrase *digital story* in *English* that were uploaded by users under the *Education* category. The results were sorted by relevance.

The screenshot shows the YouTube Advanced Search interface. At the top, the search bar contains the text "digital story". Below the search bar, the "Advanced" search panel is open. The "Settings" section includes a checked box for "Display query suggestions as I type" and an unchecked box for "Filter videos that may not be suitable for minors". The "Search" section is divided into "Find Results" and "Refine further by:". Under "Find Results", there are four input fields: "with all of the words" (empty), "with the exact phrase" (containing "digital story"), "with at least one of the words" (empty), and "without the words" (empty). There is also a "location" field with a "(show map)" link. Under "Refine further by:", there are dropdown menus for "Duration" (set to "All Durations"), "Language" (set to "English"), and "Sort Results By" (set to "Relevance"). There are also dropdown menus for "Uploaded" (set to "Anytime") and "Category" (set to "Education"). A "Search" button is located at the bottom of the panel. Below the search panel, the text reads: ""digital story"" video results in Education 121 - 140 of about 305. This advanced search was refined by: Language, Category

Figure 1. Advanced Search Criteria for Digital Stories on YouTube

Data Collection

The categories from Tables 1 and 2 were added to a spreadsheet and the attributes of the sample of 100 digital stories were analyzed and coded to obtain a frequency count of each identified attribute. An initial set of subcategories were added to the main attribute categories. Most of the subcategories were derived from the *Digital Storytelling Cookbook* or from the possible combinations of media and perspective that were initially identified. Additional variations in the use of story or media attributes were noted as they became apparent during the process of coding. The development of emergent subcategories was conducted using a qualitative process of open coding where “...concepts are identified and their properties and dimensions are discovered in the data” (Strauss & Corbin, 1998, p. 101). A screen shot from the spreadsheet that shows the subcategories for media style, type of story, and perspective is shown in Figure 2. These were the only main categories from the list in Table 2 that required subdivision. The subcategories highlighted in gray emerged during the coding process and replaced the “other” category used in the initial coding protocol.

Media Style	Type of Story	Perspective
Choices: This category deals with how the video was	Choices (See DS Cookbook pages 5-7):	Choices:
1. Image sequence with voice narration AND music	1. Character story	1. First person narrative (personal)
2. Image sequence with music only	2. Memorial story	2. Interview of one person by another
3. Image sequence with voice narration only	3. Adventure story	3. Group telling the story
4. Video clip with voice narration and music	4. Accomplishment story	4. Other (Explain)
5. Video clip with music only	5. The story about a place in my life	5. First person information/instruction
6. Video clip with voice narration only	6. The story about what I do	6. Third person information/instruction
7. Mixed media with combination of video, images, voice (or	7. Recovery story	7. Third person narrative
8. Image sequence with text and music	8. Love story	8. First person narrative (not personal)
9. Image sequence with text only	9. Discover story	
10. Image sequence with text, voice, and music	10. Other (Explain)	
11. Image sequence with text and voice	11. Information/instruction story	
12. Other (Explain)	12. Historical story	
13. Video with text only	13. Fictional story	

Figure 2. Subcategories Used During Digital Story Analysis

Results

There were two research questions that served as the focus of this exploratory pilot study. Each question is revisited in this section alongside data that helps to answer each one. The first question was, “How closely do digital stories posted on YouTube align with the classic model?” The digital stories in the sample were first matched to one of the nine types of personal digital story listed in Table 1. The remaining stories were initially categorized as “other.” The percentage breakdown of videos falling within each of these categories is shown in Figure 3. This breakdown helps to illustrate how closely the sample aligned with the personal attributes of the classic digital story. Only 55% of the sample matched the type of personal digital story similar to those described in the *Digital Storytelling Cookbook*. The remaining 45% in the other category was further subdivided using an open coding process described earlier in this paper. The other stories broke into three primary subcategories: 1) informational or instructional pieces (31%), 2) historical stories (4%), or 3) fictional stories (9%). Average duration of all 100 videos in the

sample was approximately 3 minutes, which is consistent with the typical brevity of digital stories.

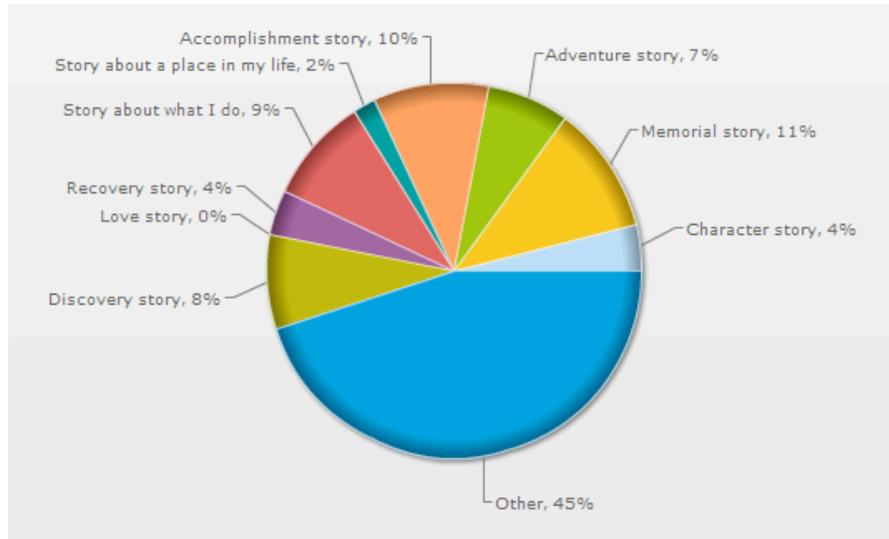


Figure 3. Percentages of Personal Digital Story Subcategories and the Remaining Others

The classic digital story model combines personal narrative with a series of images, first-person audio narration, and sometimes a music sound track. The image sequence and audio narrative told in the storyteller's voice are central to the classic model. Stories in the sample were further analyzed to see how many of them aligned closely to this model for both story content and media used. Digital stories from the relevance sample were deemed as closely matching the classic model if: 1) they used an image sequence that was combined with first-person audio narrative and 2) the story was a personal one matching one of the nine types listed in Table 1. Using this criteria, it was discovered that only 17 of all of the 100 digital stories sampled aligned with this strict interpretation of the classic model for digital storytelling. The stories in this sample tended to use a wide variety of media elements, such as text, video, and music without narration, to tell digital stories.

The second research question was, "How are the interactive tools (comments, video responses, ratings) being used?" These are the Web 2.0 tools made available with every video upload in YouTube. These were largely underutilized in the sample. The percentage breakdown of tool use is shown in Table 3. Comments were added to 26% of the sample, ratings were applied to 22%, and there were no video responses on any of the digital stories.

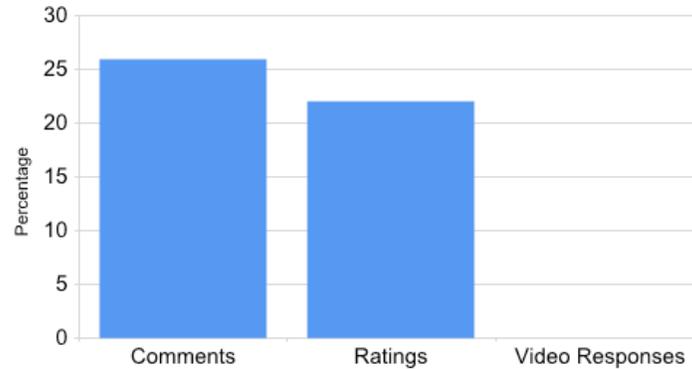


Figure 4. Percentage Use of Interactive Web 2.0 Tools for Digital Stories on YouTube

Conclusions

Given the necessity of relevance sampling to obtain digital stories from YouTube, the results from this pilot study cannot be generalized to the larger population of digital stories found online. However, the investigation revealed that classic attributes of digital storytelling are present, but not universal on YouTube. There are many examples of digital stories that incorporate variations in both story type and media. YouTube provides a context where it is possible to create a community around meaningful digital stories. However, the use of tools such as the comments, ratings, and video response tools were used at a low level. The video response tool was not used at all in the sample. It is conceivable that the role these tools may play is not fully understood or embraced within digital storytelling practice. However, that is merely speculation that will require further study. The data in this exploratory pilot study is descriptive only and does not support conclusions beyond what was discovered while coding each video. The next logical step is to survey people who have created and uploaded digital stories on YouTube to learn more. As online video sharing evolves, digital storytelling models may change in response.

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