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## **The Public as Collaborator: Towards Developing Crowdsourcing Models for Digital Research Initiatives**

Meloday Dworak



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**Melody Dworak**

**Abstract**

**Editors** | Sarah Alexander and Jen Eilers

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**Abstract:**

Digital research projects often seek out large-scale data sets but have a small budget to achieve them. In their pursuit of using technology to discover something new, some scholars have turned to crowdsourcing strategies, where the efforts of individual volunteers can contribute to collective, significant data outcomes. How can examples of successful crowdsourcing projects inform future digital research initiatives? By looking at current examples of digital research projects using crowdsourcing, this research proposes new models for amassing data through the assistance of engaged publics. Inspired by the problems posed by building a large-scale database of metadata from mid-20th century small-press ephemera, this inquiry explores what outreach strategies work for different kinds of projects and with which publics. This research performs a qualitative content analysis of more than thirty digital research initiatives that rely on crowdsourcing strategies to amass data. Through their project websites, the initiatives were coded to determine the factors that motivated contributors and the electronic interfaces employed for digital delivery. The models created from this research fall along a spectrum with minimal requirements for technology and programming capacity to deploy strategies at one end and sophisticated requirements at the other. Motivational factors discovered include competition and reward systems inspired by games, personal contributions to discovery and historical narratives, and the pure entertainment of interest-driven learning. By identifying strategies that can inform approaches to scaling up digital research initiatives, these models provide a guide for scholars with boundless ideas and limited budgets.

**Keywords:** Crowdsourcing | Digital Research | Digital Humanities | Project Management | Motivation



# The Public As Collaborator

## Towards Developing Crowdsourcing Models for Digital Research Initiatives

Melody Dworak

What are *motivations* for contributing to digital research projects?

### Methods & Results

Performing a content analysis, 26 digital research projects were coded to discover system design features and persuasive messages. All projects were found to have elements of human labor and machine labor.

Motivational messages formed the categories of Gaming, Learning, Sharing, and Giving. By tapping multiple motivations and using compatible design elements, these projects show that crowdsourcing makes us *stronger together*.

#### Gaming

- Only 5 of 26 projects attempted to maintain contributor engagement through gamification.
- Gamification is the process of using elements from video games to prompt a contributor to move through “levels” of “achievement”; the goal of the system designer is to keep the contributor engaged until the system’s purposes have been served.
- Examples of the Gaming motivation involve challenges posed to the contributor. The system rewards contributors when challenges are overcome.

#### Learning

- 23 of 26 projects engaged the contributor in a learning outcome.
- Learning taps the source that has the potential to coax an engaged enthusiast out of a disinterested bystander.
- Examples form the greatest range seen in this study. One crowdsourcing project encourages contributors to translate web pages in order to learn a language; several others engage contributors in the personal stories of characters from the past. Other projects link learning and sharing. Those who share knowledge and stories learn from others who have likewise shared.

#### Sharing

- 10 out of 26 projects analyzed spoke to a person’s desire to take what one knows and give to a community.
- Sharing includes both self-expression and contributing knowledge based on personal position and experience.
- Examples of Sharing include stories about personal experiences or the experiences of family members that affect the physical, mental, or emotional health of the individuals portrayed in the stories.

#### Giving

- Nearly all projects explicitly or implicitly spoke to an altruistic rationale of contributing to a greater good.
- Giving is defined by the individual contributing labor to the end result. The individual decides what is a worthwhile contribution to the project, leaving little room for negotiating by the designers behind the digital research project.
- Examples of Giving include contributing to further scientific discovery, to advance historical research, or simply to support the needs of an institution.

## Background, Key Terms and Resources

### How do you design a digital research project that has substantial labor needs with few staff members to fulfill them?

Related to the field of computer-supported cooperative work, crowdsourcing has become a way to leverage contributions from the public to create a more substantial collection of information. The promise of crowdsourcing has created larger questions for researchers and system designers: How do we design systems to facilitate contributions from the crowd? What motivations can system designers tap to engage people in crowdsourcing projects?

I analyzed 26 digital research projects that were sourcing contributions from the crowd to discover what approaches designers took to build systems and motivate contributors. I coded them according to elements of machine labor and human labor in an iterative process that revealed that motivations behind contributing were at the heart of system design issues. The coding decisions were my own, not based on existing content analysis models.

Some systems relied heavily on machine labor—or algorithms written by programmers—to entice contributors and maintain their engagement. Other systems relied heavily on manual labor by staff members to process contributions and maintain progress.

Unsurprisingly, systems motivating contributors through gaming required the most programming, and thus formed the smallest category due to the higher need for programming skills. It is also not surprising that nearly all projects marketed themselves to potential contributors as a way their efforts could benefit the greater good. The interesting lesson here falls in the middle, where learning motivates people to continue contributing. Learning is an outcome that can be produced at all points along this labor spectrum.

This is exploratory research. Future progress requires having multiple coders to determine inter-coder reliability. That stage of research could form more concrete



crowdsourcing models to assist digital research project designers in planning and building their systems.

### **Key Terms**

**Citizen Science:** A trend to engage amateur enthusiasts in scientific research, often in a crowdsourcing capacity where the enthusiasts contribute potential solutions to a puzzle for the purpose of exploring a large-scale problem.

**Computer-Supported Cooperative Work (CSCW):** More structured than crowdsourcing, CSCW is a field in computer science that explores designing and building systems to facilitate collaboration among people working on a shared project.

**Content Management Systems (CMS):** Database-driven solutions for managing and publishing content online. Many CMS tools are open source, meaning users pay no fees for using them and the code is non-proprietary. CMS tools are easier for non-programmers to use because of Graphical User Interfaces (GUI) and WYSIWYG (what you see is what you get) editing. Examples of CMS tools include WordPress, Drupal, and Omeka. Omeka creators see it as not just a CMS but also as an archival digital collection system.

**Crowdsourcing:** Gathering information from members of the public, named or anonymous, to create a more substantial body of information than on one's own. Crowdsourcing first grew popular with the business community as a way to build better products faster and cheaper (ex: reviews on Yelp, stock photography websites, graphic design competitions). With the proliferation of web-based tools, crowdsourcing became a promising option for communities and researchers to try for their own initiatives' goals.

**Digital Research Initiatives:** Using digital tools to spur discovery, either at an academic or community level. A digital research project is how that initiative manifests itself as a web-based system to collect, communicate, and conserve research, whereas the initiative itself is the broader aim or mission.



**Gamification:** Applying game design principles to non-game applications. Gamification manifests as scored points, badges, achievements, leveling up, rewards, and puzzles. The term is used most in the fields of game studies, digital media and learning (ex: Badges for Lifelong Learning, a HASTAC collaboration with Mozilla and supported by the MacArthur Foundation), and applications development (ex: Fitocracy, a fitness tracking app for smartphones).

**Systems Design:** A flexible term that can be used to mean systems for information, organizations, policy, or people. Here, the term refers to web-based platforms interacting with a labor pool.



### **Recommended Readings**

Gee, J. P. (2003). *What Video Games Have to Teach Us About Learning and Literacy* (1st ed.). Palgrave Macmillan.

McGonigal, J. (2008). Why I Love Bees: A Case Study in Collective Intelligence Gaming. *The Ecology of Games: Connecting Youth, Games, and Learning*(pp. 199-228). Edited by Katie Salen. The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning. Cambridge, MA: The MIT Press. Retrieved from <http://mitpress.mit.edu/books/chapters/026269364Xchap9.pdf>

Pan, Y., & Blevis, E. (2011). A Survey of Crowdsourcing as a means of Collaboration and the Implications of Crowdsourcing for Interaction Design. Presented at the International Workshop on Collaboration: Human-Centered Issues & Interactivity Design, Philadelphia, PA, USA. Retrieved from <http://mypage.iu.edu/~panyue/paper/CHCI&ID%202011.pdf>

