

New Horizons in Visual Literacy

Selected Readings
of the International Visual Literacy Association



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Selected Readings of the International Visual Literacy Association

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**New Approaches to Image-based Research and Visual Literacy:
A Pilot Project Report
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Abstract

This paper details the results of a pilot project that explored the use of Image-based Research and a new method of collecting visual data online. Image-based research should be the fundamental method for investigating visual, media and digital literacies, yet it has only seen a modest amount of interest. In pursuing this imbalance a small study was conducted availing of Amazon's new online marketplace, Mechanical Turk. This crowd sourcing technology allows researcher requests to be submitted to a database where they are made available for individual members to select and complete. These are known as Human Intelligence Tasks, or HITs. Using Mechanical Turk, image-based data was gathered to explore the crowd sourcing mechanism itself with visual literacy as the pretext and insight into understand the visual interpretation of words as the intended outcome. Two HITs were created which asked respondents to submit visual representations, three per person, in response to word sets that were posted on the site. Each word set consisted of three words that varied from concrete to abstract concepts. The research and image data yielded some very interesting results of how people perceive and represent concepts visually. The conclusions, although underdeveloped in the scope of this pilot, suggest a globalizing effect on imagery might be taking place. If developed further continued research could help inform visually based literacy/media studies and usher in a new method of online data collection. The use of Mechanical Turk and similar methods that employ new media technologies have the potential to promote and further image-based research and inform methodologies in visual literacy, art education and other areas.

Keywords: Image-based research, visual literacy, Mturk, art education, globalization

Pilot Project Overview

Can Internet task-based marketplaces or "crowd sourcing" software be used for imaged-based research in visual literacy? The initial idea for this pilot came from the work of artist Aaron Koblin and his use of Amazon's Mechanical Turk (Mturk) to collect various forms of data including visual imagery and assembling them for various art projects. One of his projects, *The Sheep Market* (2006), had *workers* (members of Mturk who complete tasks) draw a sheep facing left. Koblin then collected some 10,000 pictures that represented people's interpretations of the task and what they thought a sheep facing left looked like. This prompted the question, could a researcher make use of this online marketplace and its technology to gain a better understanding of visual literacy? Using a similar approach, I gathered visual forms of data from those participating in the Mturk online community, which has yielded some interesting results of how people perceive and represent things visually:

Taken cumulatively images are signifiers of a culture; taken individually they are artifacts that provide us with very particular information about our existence. Images provide researchers with a different order of data and, more importantly, an alternative to the way we have perceived data in the past. (Prosser, 1998, p.1)

Research Activities and Procedure

The project went relatively smoothly without any major challenges, surprises, or deterrents along the way. The most difficult part was conceiving the project itself in such a short time and searching for ways to implement my ideas and new ways of approaching the area of imaged-based research.

Registering for Amazon's Mechanical Turk was reasonably straight forward with typical personal information being provided to create an account similar to many other websites. After finding my way around the site and learning where all the functions were, I looked over some other examples of *Requester's* (people who post tasks) *Human Intelligence Tasks* (HITs) to get an idea of how others were using the system and the ways in which they proposed their tasks as well as the reward allotted per task.

In order to create a HIT you can select a prefabricated template to use or manually create one if none of the options suit your needs. There are approximately 13 templates to choose from including; survey, imaged tagging, image filtering, Website filtering, comparison, categorization and more, most of which are aimed at consumer or business based clients who wish to gather data for product placement, website rankings and customer feedback. Since none of these options were what I required for my pilot project I manually created a HIT. This was not a difficult task and consisted of; title, description, key words (for the search engine), instructions for *workers* (people who complete a HIT), number of assignments (maximum number of workers that can submit a task), time allotted for competition of a task, and an expiration date for the HIT to be completed.

Two HITs were created, each with a set of three words, the words were chosen based on how easy or difficult they might be to represent. So an easy, medium and difficult word was chosen for each HIT and workers were asked to draw all three and then upload them to the server where they could be reviewed, the only difference between the two was the reward; one was 10 cents and the other 5 cents. The HIT descriptions are shown in Appendix A.

On my first request, out of the 30 assignments I received 21 were acceptable and met my requirements and 9 were rejected. On my second request out of 30 assignments I received 20 that were usable and 10 that were rejected. The reasons for rejecting some submissions were that they did not the guidelines; people uploaded photos of manga, my own consent form and other items which had no relation to the project. The requests received 70% and 67% of usable data respectively.

With regard to conducting similar research in the future, this project revealed that more explicit instructions need to be provided in order to receive less unusable data; a better approach may be to upload a suitable example which clearly illustrates how the images should be submitted. When completing the task, many of the respondents wrote the words on or very close to the drawings, which obscured the image and made the picture less usable for further exploration; for example taking the picture and asking people to assign a word to it. Others uploaded comic strips and a series of photos. This project's design flexibility definitely leaves itself open to being tailored to collect other kinds of image data, at a later date I would like to repeat a similar design but instead ask for 3 photos instead of drawings to compare the two forms of visual data.

Demographics

A demographic analysis showed that the majority of respondents were from India, however responses were also received from a respectable cross section of other countries. The ratio of male to female respondents was roughly equal; there was also a sizeable portion of respondents who did not provide demographic information and who have been labelled as

unknown. It should be noted that three participants submitted pictures for both requests, but all have been counted towards the overall number of respondents. The details of the demographic analysis can be seen in Figures 1 & 2.

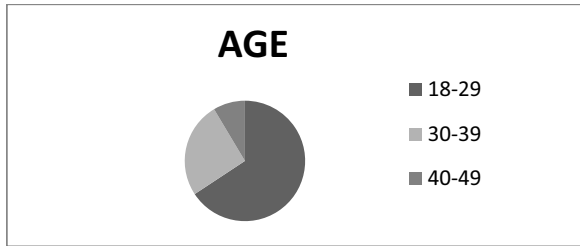


Figure 1. Age of Respondents. Age of respondents ranged from 18 to 44 years of age.

The majority of respondents were aged from 18 to 29, followed by respondents aged 30 to 39 with only a handful of respondents stating their age as 40 or above. These results could suggest that the nature of the research being online and technology based attracted a younger more Tec-savvy group of respondents who were more familiar with navigating these types of websites and had some pre-existing knowledge of scanning and uploading digital image files.

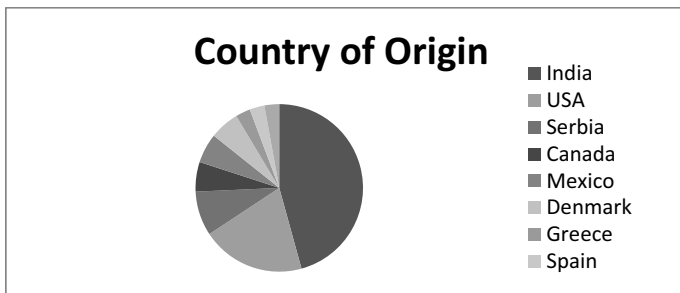


Figure 2. Country of Origin. Majority of respondents were from India and the USA along with a small cross section of other countries.

Analyzing the statistics from this section garnered the most scrutiny, as the number of respondents from India (39%) was far greater than that of any other country including the second largest group of respondents from the USA (17%). Issues were raised as to what influence the task reward (10 cents and 5 cents) may have had on the respondents choice to participate in the study and complete the task. For example, did the reward make a significant contribution (in the local currency) to a person's finances that they felt compelled to complete the task? My preliminary research indicates that the reward was not a significant factor in influencing whether or not those respondents from India participated. A cursory glance at wages in India (Express India, 2009) suggests the reward amount would equal to less than a tenth of a percent of average monthly income, and much less if the respondents were middle income earners, which is the speculation here.

It is well known that India has become a hub for the outsourcing of human resources from American and Canadian companies for telemarketing, customer service, and other IT and telecommunication related jobs. In 2008, approximately 4 million people in India worked in the IT industry and that it is a significant source of GDP and job creation in the country (Mitra, 2008). One speculation is that due to this large population of computer literate workers who are acutely aware of companies such as Amazon (through which my project was done) resulted in a larger portion of participants claiming to be from that region. As an added caveat, it is unknown if some of these respondents are immigrants currently living in North America.

Data Analysis

In order to analyze the representations of individual words, all drawings (which were 3 per page) were opened in Photoshop and separated (cropped) then saved in individual folders grouped together by the word they represented. Drawings were cleaned up and resized to make them easily visible when they were uploaded to the web via Prezi (an online, image friendly, alternative to Power Point). Cleaning up meant that some of the drawings, which were scans, ended up with the paper white background looking grey and needed to be lightened slightly to more closely represent what they would look like originally on a fresh sheet of paper. Care was taken not to alter or eliminate any portion of the drawings or lines within the drawings. The use of Photoshop was also necessary because files were in a variety of different formats; MS word, BMP, JPG, PSD etc. and had to be harmonized into a single format (JPG) for ease of use in uploading them to the internet and looking at the data in an image viewing program. These format differences added considerable time to the process of data analysis and in any future research, using this method of data collection, prerequisites as to what format is accepted, max/min resolution and so on would have to be clearly stated. This would be particularly important in a larger study taking place over a longer period of time.

The drawings were analyzed individually in original clusters of 3 as well as grouped together by word. Comparisons were made on the level of skill, how they chose to represent the words and the commonalities or differences between them.

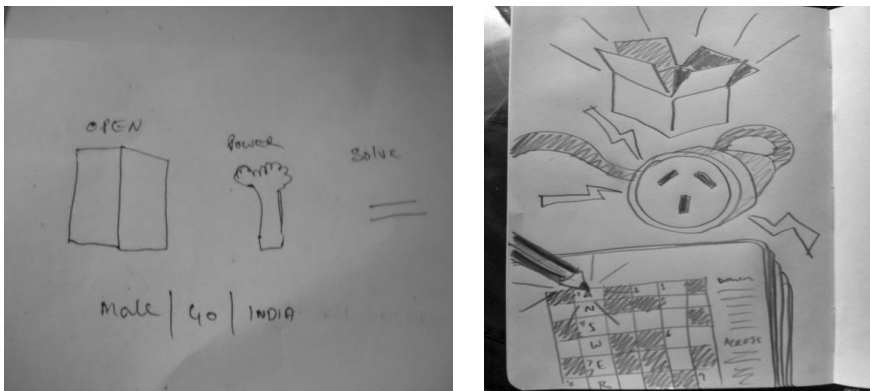


Figure 3. Comparison of Simple vs. Elaborate Drawings. A simple drawing (left) and an elaborate one (right) for the words; open/power/solve

Drawing skill or ability to accurately render a drawing did not seem to present a problem for any of the participants. There were those who drew crudely or simplistically with symbols, more elaborately, in a comic strip style as well as some that used computer aided drawing tools. All were able to represent the words, many with very similar renderings and only a few had an ambiguous meaning.

There were no remarkable differences between the drawings submitted by people of different ages, removing that data from the analyses showed it was difficult to construe what age a person was according to the drawing submitted. Similarly there also seemed to be little difference between drawings from different countries or cultural backgrounds. This was in fact one of the more interesting findings of the study. It was actually surprising how similar some of the drawings were to each other. For example, in HIT-1, a 29-year-old man from Greece and a 20-year-old man from India both used a muscular bicep to represent the word *power* (Figure 4). In HIT-2, a 23-year-old woman from India and a 24-year-old woman from Denmark both drew very similar pictures of an ant being crushed underfoot to represent the word *oppressive* (Figure 5).

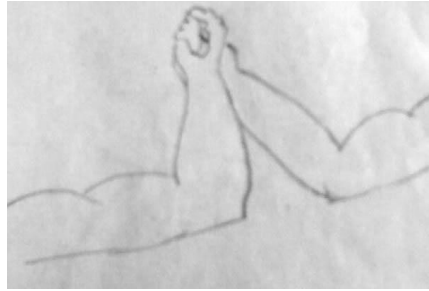


Figure 4. Comparison of the Representation of the Word *Power*. Left a 29 year old Greek male's drawing; right a 20 year old Indian male's drawing.

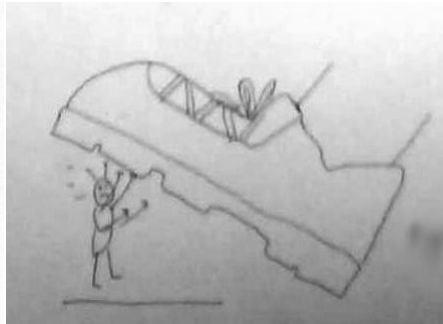


Figure 5. Comparison of the Representation of the Word *Oppressive*. Left a 23 year old Indian female's drawing; right a 24 year old Danish female's drawing.

Furthermore submissions for each word generally had a cluster of drawings conveying similar meanings or were similarly rendered drawings:

HIT -1. (See Appendix B)

1. For the word *open*, 11 out of 20 submissions used images of boxes, doors or windows opened or being opened
2. For the word *power*, 9 out of 20 respondents associated power with electricity (either natural or man made).
3. For the word *solve*, 12 out of 20 respondents used either puzzles or equations to represent the word.

HIT -2. (See Appendix C)

1. For the word *hot*, an overwhelming 18 out of 21 respondents choose to represent it with a *physiological* depiction indicating temperature. Nine of these were in the form of fire, 4 used the sun, 4 used hot food and 1 indicated steam/heat with wavy lines.
2. For the word *together*, 15 out of 21 respondents represented the word using 2 people either in an embrace or holding hands.
3. For the word *oppressive*, 12 out of 21 respondents used some sort of physical or violent action. Eight of these were a person (or ant) being crushed and four depicted acts of violence between people.

Even though visual culture is a global phenomenon, one that dominates our everyday lives (Harris, 2006; Prensky 2001), actual images receive far less attention within education

research when compared with text based forms of communication (Chung, 2005; Delacruz 2009b; Lester, 2006). This is disconcerting because of the importance of visual images in meaning construction and their effect on learning (Lester, 2006; Stankiewicz, 2003; Clark and Paivio, 1986; Eisner, 1986). Two aspects of visual literacy that these results help shed light on are an underlying universal code or basic structure of visual language or a possible globalization of visual representation. Despite cultural, age, and geographic differences, the representations had some striking similarities in the way they conveyed the meanings of the words. These results are in contrast to earlier studies in art education that showed noticeable differences in graphic representation (drawings) across cultures (Wilson and Wilson, 1984) and may hint at what some recent scholars suggest (Delacruz, 2009a; Desai, 2008) is a growing homogenization of visual representation is taking place due to globalization. Meanwhile, Eubanks (1997) remarks that children's drawings from different cultures have similar elements of visual form called graphemes which, like phonemes, are assembled via a set of rules or "visual syntax" to create meaningful drawings. The degree to which the content present in these drawings is being influenced by other cultures or is part of some universal graphic code remains to be seen, but this data provides a starting point with which to explore these ideas further.

Duncum (1993) provides five functions of the visual arts in society: Substitution, Narration, Embellishment, Commitment/persuasion and Personal expression. His first and fifth functions can aid in the interpretation of the representations collected in this project.

1) Substitution: a need for pleasurable looking and recreating the world through representation to better understand it. This dates as far back to cave paintings and ancient Egypt; we produced images that provided concrete examples of reality at the time as well as records of progress and change, which could be considered the most primitive form of visual literacy. This could answer part of the question as to why people may have chosen my HIT request; a brief respite from a long day of working on a computer and a chance to use their skills for a more pleasurable task than the ones they are accustomed to.

5) Personal expression: it is often seen as a means of differentiating an individual from others and promoting one's uniqueness. This also relates to the importance of the visual in socially constructing our own realities and making sense of the realities of others. As illustrated in some of the responses I received, some people seemed to take great care in their representations either in the skilfulness of the rendering or in linking the three words together to form a commentary or short narrative. Again, this may answer part of the question as to why people chose to complete the task; it provided them with a means of self-expression, as well as communicate their interpretation of reality, albeit in a very limited way. As Eubanks (1997) remarks, "the expressive component of the visual language is the creation of visual symbol systems, the making of marks or objects that communicate ideas" (p.31).

One last memorandum that should be made regarding the analysis of the image data is taking into account researcher bias when categorizing, grouping, and evaluating the images. Although I feel I approached the data as objectively as possible, for more stringent results that will hold up against fiercer scrutiny, it would be better to employ the help of some neutral parties to help in organizing the data, so as to understand reliability and increase validity.

Conclusion and Potential for Future Research

Contrary to the apprehension encountered at the onset of this pilot, attempting research that was both unfamiliar in methodology and in method of data collection, it finished with fairly positive and encouraging results. In a short amount of time, approximately 4 weeks, I was able to collect 60 responses for my study: 42 were usable and contained a total of 126 individual pictures or representations of the 6 words requested.

Mturk, as a data collection tool, holds many possibilities for continued research in the areas of visual and media literacy. With more careful consideration of the sets of words chosen and the collection of image data on more abstract concepts and possibly some short phrases the richness and potential of the image data could be fully realized. Assigned tasks

could also ask for photos instead of drawings as well as other forms of imagery. Another possibility is of reversing the task, providing images and requesting HITs where respondents would name the image(s). To explore media literacy it would also be very interesting to create HITs that show a short video clip, from either television or cinema, and ask respondents to *deconstruct* what they have seen; that is, to write a response on what they think is being conveyed in the clip, what sorts of messages are obvious, and if it provokes any specific reaction, emotional or otherwise. The Mturk service also has the potential of collecting more in-depth survey data to complement and support the image data gathered.

If used carefully and with some fine tuning, the Mturk service could prove a very useful tool in future research projects. It provides access to a large multicultural and geographical diverse online community of participants who are not constrained by geography or time and have the ability to complete the tasks asynchronously in a location of their choosing. This method of data collection also overcomes some of the traditional concerns present in face-to-face interviews. In fact finding interested people can often be the most difficult part of any type of research, add to that other variables such as rapport, physical bias and of course time and place. I look forward to pursuing this method of inquiry more and feel it was an extremely valuable inquiry which will lead towards the realization of upcoming research projects.

In such a short amount of time and in the confines of a small pilot project this research and its methods have already suggested some interesting and potentially important correlation between how people visualize their world and the everyday concepts they encounter. Given more time and investment it could prove to be the means to help unfold and understand our diagrammatic digital world.

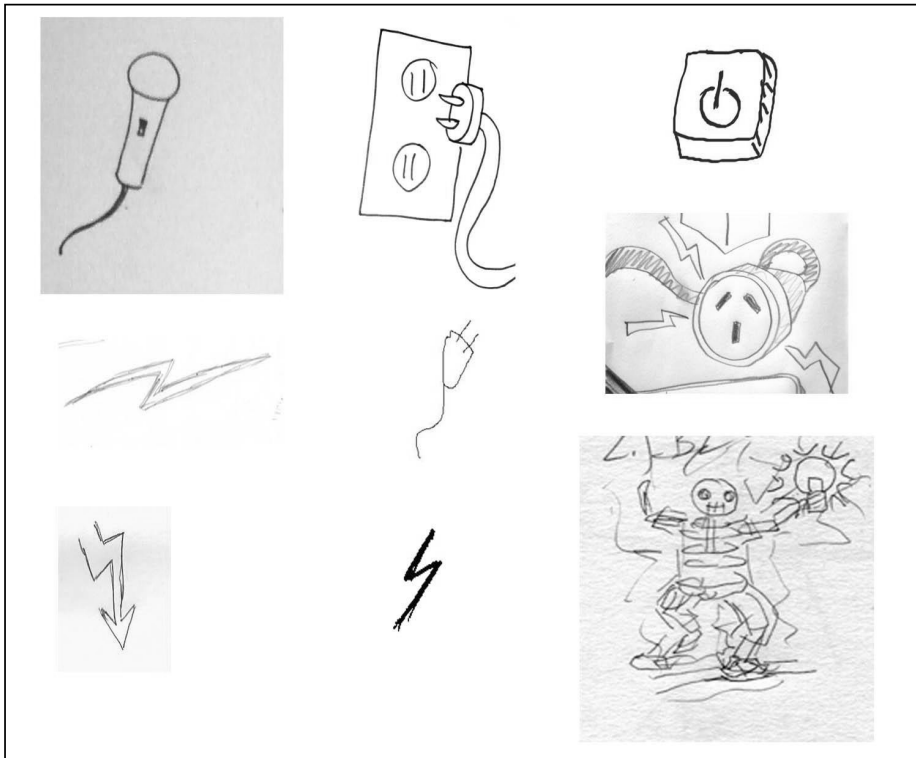
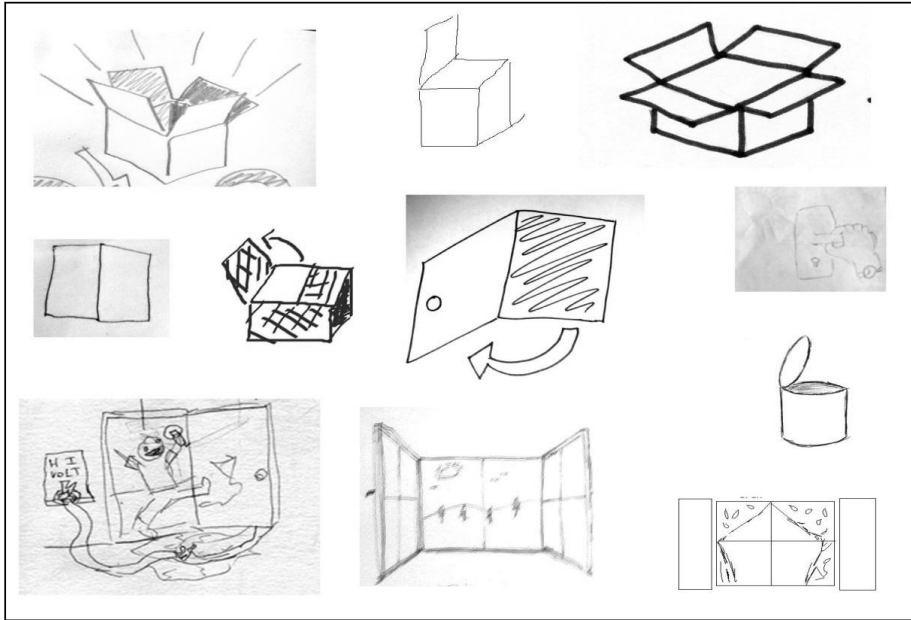
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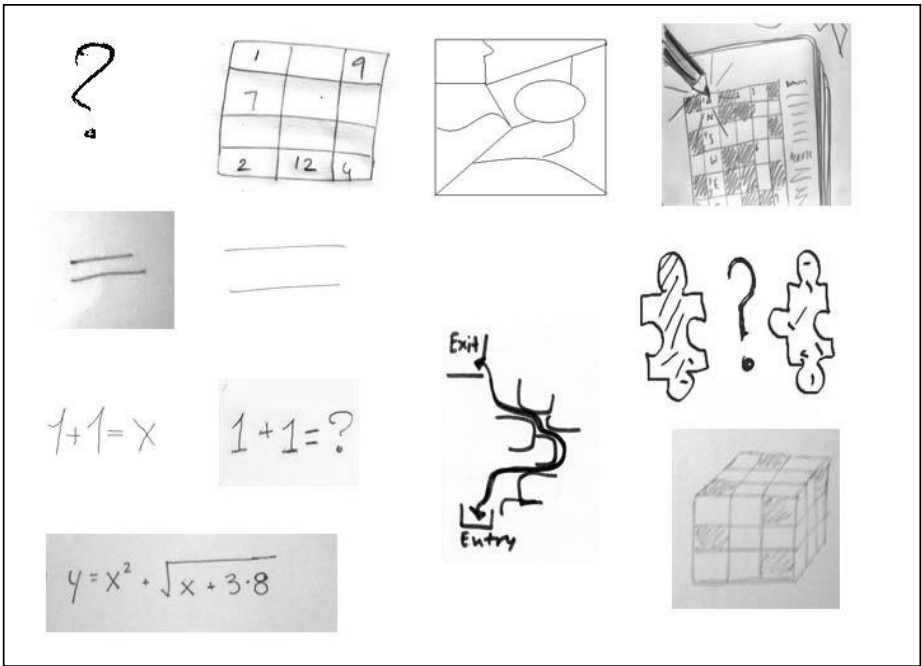
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Appendix A: HIT descriptions

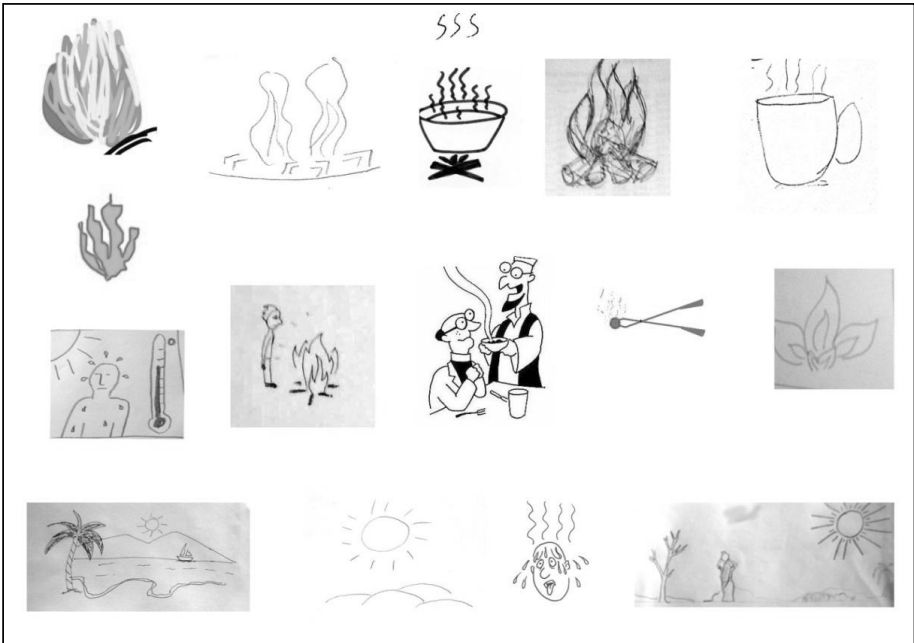
Drawing and Representation (HIT # 1)
<p>On a single sheet of paper please draw 3 pictures that best represent the 3 words listed.</p> <ol style="list-style-type: none">1) hot2) together3) oppressive <p>At the bottom of the sheet of paper please write your gender, age and country of origin. Example: Male/33/UK or Female/47/USA. When you are finished use a scanner or digital camera to transfer the drawing to your computer and then upload it to Mturk.</p> <p>Please do NOT write your name or any other information*.</p> <p>*Please note that by submitting files for this HIT you declare that you are an adult (18+) and consenting to participate in an educational research project, for details please click on this link: http://imagebasedvl.blogspot.com/2011/02/drawing-and-representation-informed.html</p>
Drawing and Representation (HIT # 2)
<p>Please do NOT respond to this HIT if you are under the age of 18*.</p> <p>On a single sheet of paper please draw 3 pictures that best represent the 3 words listed.</p> <ol style="list-style-type: none">1) open2) power3) solve <p>At the bottom of the sheet of paper please write your gender, age and country of origin. Example: Male/33/UK or Female/47/USA. When you are finished use a scanner or digital camera to transfer the drawing to your computer and then upload it to Mturk.</p> <p>Please do NOT write your name or any other information*.</p> <p>*Please note that by submitting files for this HIT you declare that you are an adult (18+) and consenting to participate in an educational research project, for details please click on this link: http://imagebasedvl.blogspot.com/2011/02/drawing-and-representation-informed.html</p>

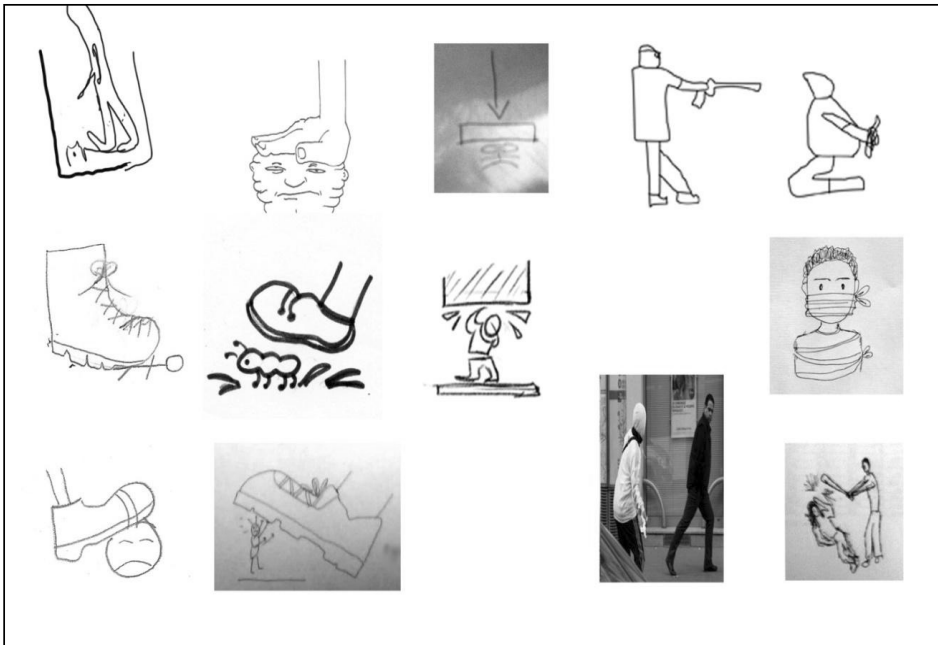
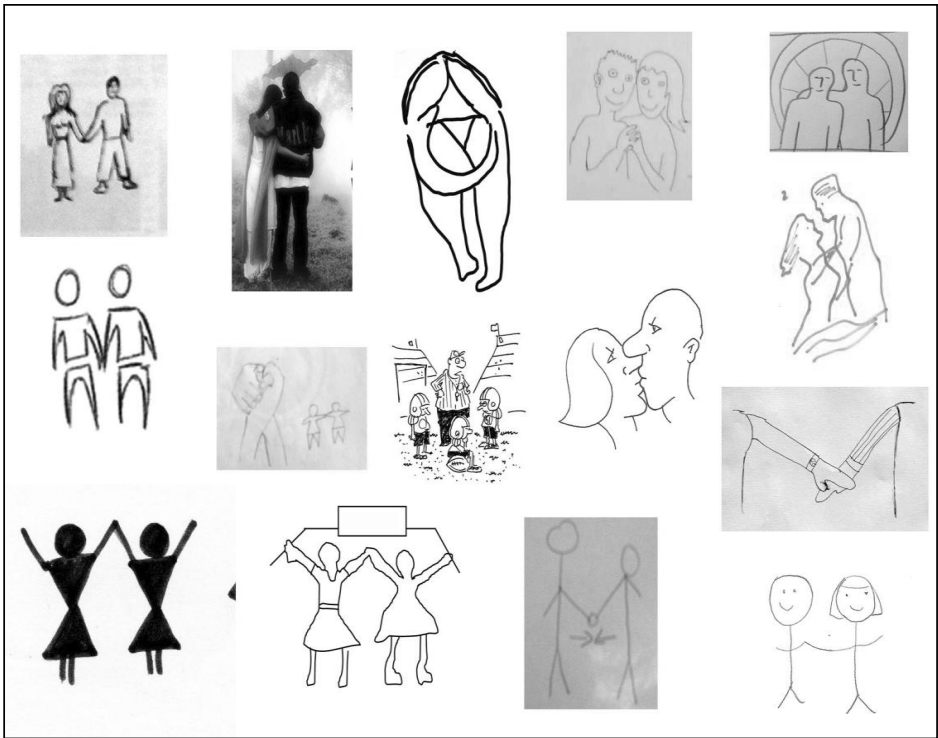
Appendix B: Representations for the words *Open*, *Power* and *Solve*





Appendix C: Representations for the words *Hot*, *Together* and *Oppressive*





NEW HORIZONS IN VISUAL LITERACY

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