



# Photovoice: A promising method for studies of individuals' information practices<sup>☆</sup>

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## 1. Introduction

Methods in information behavior research have tended to remain stable, with little variety during the past 20 years (Julien, Pecoskie, & Reed, 2011), with surveys (e.g., questionnaires, interviews) dominating. In addition, there has been insufficient methodological triangulation (including mixed-methods studies) in information behavior research. Interestingly, few scholars publish meta-level discussions of their methodological approaches, which could guide new research practices within the field. Seeking innovation in research methods with a view to incorporating the demonstrated practices of undergraduate students into the design of information services, this project using a quantitative survey, photovoice, and qualitative interviews to gather data to inform information literacy interventions at the undergraduate level based on students' authentic experiences. The photovoice method is described in detail to provide information behavior scholars with a glimpse of the value of this approach for future studies. Photovoice, at its core, is a valuable way to gather rich data from an emic perspective, as it seeks to uncover participants' views of their worlds and the challenges they face. In photovoice, participants are given easy-to-use cameras and asked to photograph what is salient in their everyday worlds, giving particular attention to a phenomenon of interest. The resulting photographs are used as prompts for discussion about the meanings and significances that the participants attach to the documented activities or objects. Although the study's purpose is outlined to provide context for the discussion of photovoice, the focus is the photovoice method.

## 2. Problem statement

Research in information behavior has a rich history, but frequently receives criticism for lacking imagination in methodological approaches. More specifically, methods have tended to represent etic perspectives, i.e., researchers' rather than participants' perspectives.

Emic approaches such as ethnography, which privilege participants' experiences, are less commonly employed. There are sound, practical reasons for this discrepancy, most of which center on logistical convenience for researchers and privileging of quantitative, rather than qualitative, scholarship in the academy. However, a truly user-centered perspective of information behavior requires investment in methods that explore that behavior in emic terms. Using such methods, research results can be more meaningful from the point of view of users, and data often can have relevant practical application. Photovoice is one such emic method; it has been employed successfully in other social sciences, but to date remains relatively unused in information science.

## 3. Context for the study

Undergraduate information literacy instruction in North America is strongly influenced by external standards (e.g., Association of College and Libraries (2010)). Alternatively, information literacy instructors design instruction based on their personal beliefs of the learning outcomes and skills students require. In both scenarios, information literacy instruction delivered at the postsecondary level tends to be designed with little understanding of or consideration for students' information literacy experiences in elementary and secondary school. Academic librarians may overestimate undergraduates' skills on the basis of their generational affiliation (e.g., as "millennials"), or librarians may assume (inappropriately) a blank slate with which to begin information literacy education.

A more student-focused approach to instructional design, consistent with the client-focused service delivery commonly valued within libraries, investigates and accounts for students' prior knowledge and personal perspectives. Such an approach would generate student-centered curriculum and motivate appropriate pedagogy with significant potential to increase the relevancy of information literacy instruction, particularly in the digital context of students' lives. This premise is the basis for the study; the project was designed and implemented by a team of scholars in information science and secondary education and professional librarians at a large Canadian university. The study is grounded in an inquiry-based educational context where curricula (at all grade levels) mandate development

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of information literacy skills through the use of information technology and school library resources. Thus, high school students are expected to develop information technology skills and information literacy competencies; however, research suggests that these outcomes have not been fully realized for most students (Julien & Barker, 2009). The project is also grounded in previous research into undergraduates' experiences with learning spaces on campus and use of information technology in their academic work (Given, 2007).

This study examines the information skills of high school and university undergraduates, and explores their perceptions of information literacy in their academic success, analyzing students' skills and experiences as they transition from high school to university. To date, research has focused on the stark transitions experienced by students as they shift from relatively structured, teacher-led experiences in high schools, to the more independent learning experiences common in the post-secondary context. This study's results will provide guidance to high school teachers as they prepare students for post-secondary academic expectations and to academic librarians as they design undergraduate instruction.

#### 4. Study design

This project explores students' experiences in the final year of high school and in the first year of university, to reveal their interactions with academic information and processes. In the study's first phase, the information literacy skills of over 100 students at three high schools were tested using the James Madison University "Information Literacy Test" (JMU ILT) to identify baseline skills. In the second phase, 18 first-year humanities and social sciences undergraduates (to date) completed the JMU ILT and participated in photovoice activities to explore informational activities relevant to their academic studies. Examples that are representative of photographs produced by the study's participants are included in Appendix A. The data (test scores, photographs, and interviews) were gathered to inform the design of information literacy instruction in the academic library, to be implemented in the final year of the project. The data also document those information technology tools that best support students' learning, including social networking tools, with implications for the education of future teachers and librarians. It is hoped that future high school teachers will graduate with the skill sets required to support the information literacy instruction expected of them (Julien & Barker, 2009), including appropriate use of Information Technology tools.

#### 5. The photovoice method

Photovoice is only one method (among many) that uses photography as a research strategy. Hartel and Thomson (2011) have recently provided a concise overview of photography in studies of immediate information spaces. As these authors note, visual research can be both a methodology that guides a full research design, or it can be one method among several in a study that employs multiple methods. Examples within information studies include Julien and Hoffman (2008), who used photographs to document public library spaces, and Given (2007) who used a photovoice method to explore academic library spaces. Similarly, Foster and Gibbons (2007) gave students cameras in their study of the University of Rochester Libraries, and Gabridge, Gaskell, and Scout (2008) used photo diaries to explore students' information behavior. Although photography has not been used significantly in library and information science, visual methods have been prominent in other disciplines, such as anthropology and sociology, most often to document researchers' observations.

Photovoice was developed first by Caroline Wang and colleagues as a method of understanding health issues of rural women in China. The method was conceptualized as a framework to conduct needs assessments, particularly focusing on the women's perspectives. An important aspect of the method from the beginning was that the data gathered would be used to influence health care policy. That first photovoice study involved 62 marginalized rural women who were provided with cameras, trained in their use as well as in ethical issues with photography, and subsequently interviewed about the resulting photographs taken in their community (Wang & Burris, 1994).

Since that time, five basic principles of photovoice associated with its use have emerged (Wang, 1999):

1. Images have the power to teach:
  - a. visual representation enhances understanding of verbal concepts;
  - b. the images an individual produces show their self-perceptions;
  - c. as image interpretation is subjective, the interpretations that emerge reveal dominant perceptions and broader worldviews.
2. Pictures may have the ability to influence policy:
  - a. images can help to shape researchers' worldviews, as well as those of other people;
  - b. photos can inspire reform and support the desire to change (e.g., photos taken of Vietnam War casualties affected Americans and influenced the gradual withdrawal of public support for that war).
3. People within communities may be empowered to shape policy affecting their communities:
  - a. policy makers are not always insiders in affected communities;
  - b. policy makers do not necessarily have complete understandings of the community's needs and priorities;
  - c. involving people who will be directly affected by policy creation and evaluation ensures that policy will be useful and appropriate.
4. A process that requires policy makers to be the audience for community members' perspectives can assist in creating positive change:
  - a. for research to have an impact the audience must be open to using the findings to improve the community;
  - b. involving policy makers in a photovoice project aligns their understanding of the issues with community members' perspectives and opens lines of communication.
5. Photovoice emphasizes individual and community action:
  - a. participants are not only passive data producers;
  - b. photovoice empowers individuals to discover analytical tools and develop peer networks.

Photovoice has strong roots in Freire's theory of empowerment education, feminist theory, and documentary photography. Paulo Freire promotes individuals taking ownership of their education by engaging in dialogue and thinking critically about their community and circumstances (see Riedler & Eryaman, 2010). Wang and Burris (1997) note that Freire emphasized having people be active participants in prioritizing knowledge, rather than being passive recipients. In this way, empowered and engaged communities are created. Using visual images in dialogue can act as a code that participants are able to interpret. This code is a part of participants' lives and is therefore comfortable and understandable, but it is also abstracted and open to interpretation.

Feminist theory's focus on underrepresented and marginalized people, who may be misunderstood by government policy makers, is also a strong current within photovoice. In Wang's research, emphasis was placed on ensuring that women's voices and perspectives were accurately and ethically represented. Feminist theory, which emphasizes giving voice to voiceless populations, drove the research team to decide that photovoice should represent participants by using their words and their vision of the world. Giving

voice to the voiceless can be expanded beyond exclusively female populations to any group or community that does not have direct influence on the policies and laws that affect them (see Olson & Fox, 2010). Another relevant aspect of feminist theory is the benefit of learning through cooperative group activities. Participants can learn new skills from group interactions and from peers' experiences. Cooperative learning also strives to equalize power dynamics in researcher–participant relationships and within the studied community.

Photovoice is also influenced by documentary photography. As noted by Wang and Burris (1994), the portrayal of a community can be better communicated with the visual image than verbal or written description alone. However, the reality portrayed in a photograph is positively affected by the perspectives and place of photographer, since photographers integrated in the communities they portray can offer fuller and deeper insights than outsiders. By giving cameras to participants, photovoice researchers aim for a more authentic, or emic, view of participants' perspectives and priorities.

Since its original application, photovoice has been adapted and used to promote college students' health advocacy (Goodhart et al., 2006), to document concerns of the homeless (Wang & Redwood-Jones, 2001), to study individuals with chronic illness (Allen & Hutchinson, 2009), to address adults' mental illness concerns (Jurkowski, 2008), to understand nurses in Uganda (Fournier, Mill, Kipp, & Walusimbi, 2007), to engage youth in school and community improvement projects (Wilson et al., 2007), and to understand youth identity in Baltimore (Strack, Magill, & McDonagh, 2004). Though not called photovoice, a similar method was used in studies examining how consumer branding affected identity construction in youth (Croghan, Griffin, Hunter, & Phoenix, 2008), how communities view tourist industry amenities in natural environments (Van Auken, Frisvoll, & Stewart, 2010), and students' lives and environments in Buenos Aires (Meo, 2010). While most studies have been in health education, photovoice as a framework for community assessment can provide a balanced and participant-oriented way to approach information literacy and other information behavior studies.

## 6. Considerations for implementing photovoice

### 6.1. Recruitment

The first stage of a photovoice project is recruitment, which is more complex than in conventional interview studies. Before potential participants are recruited, policy makers and people in power positions need to be enlisted to act as co-researchers or serve on an advisory panel. This creates partnerships between those in positions of power and the community being investigated. Because policy makers may not be directly embedded in the communities they govern, a major focus in photovoice projects is to use the information gathered to help policy makers see issues from the point of view of those not in power. Involving policy makers from the beginning also helps to educate these individuals about the project and its aims. This understanding develops willingness to work with the community and to use the information gathered in future planning; it also ensures that decision makers are not put in a position where they feel confronted by the results. Partnering with policy makers and organizational leaders may also ensure that funding and support is available to carry out the project. For example, in the current study the authors are partnering with the University of Alberta Libraries, which as an organization works to connect users with information resources. To achieve that goal, librarians have a vested interest in keeping their services relevant, informative and desirable, all of which requires feedback from users.

### 6.2. Training

The training involved in photovoice projects is also more involved, given the use of cameras to gather data. Data gathering happens outside of researcher-controlled conditions and is placed in participants' hands. Without proper training the data gathered may not meet appropriate ethical standards. This means that, prior to providing cameras, researchers must train participants on the ethics of picture taking and the potential pitfalls that may occur. This training should involve discussions about the power dynamics of the camera's viewpoint and the need for consent when taking a picture of an individual or in a private organization. Participants also must be educated about safety concerns, privacy protection, and the need to avoid portraying someone in an embarrassing or damaging light. Due to the unique way photovoice participants are involved in data gathering, analysis, and sometimes even the planning and dissemination phases of the study, they become researchers in their own right. By educating participants in ethics and safety, the core research team grants participants the same respect and consideration as they would their colleagues, involving participants directly in the responsibility of ensuring sound, fair, and representative results. This deep involvement and experience empowers participants for future endeavors. In the authors' study, which was approved by the Research Ethics Board of the institution where the research was conducted, researchers spent time with each participant to explain the ethics issues involved and to discuss typical situations that might arise. Additional explanation was detailed in a brochure given to all participants when they received their cameras; here is an excerpt:

*Even though we are asking you to photograph situations that fit the criteria for this study, we need you to protect the rights of others. Just because that couple kissing in the stacks is preventing you from getting a book you need doesn't mean you should photograph them and identify that as a 'barrier preventing your access to information'. We appreciate a good sense of humour but not as much as we appreciate a person's right to privacy.*

Similarly, the quality of the photographs will vary, depending on the photographic skills of the participants. While it has not been a requirement for all photovoice projects, many have involved some sort of training with camera use and technique. This training is often based on participants' prior camera knowledge, and where and how the images produced in the study will be displayed. Some studies have involved professional photographers to help participants, in essence incorporating photography classes for individuals who may not otherwise have had sufficient background. If the end product is to be a town hall or gallery display, those involved may want the photos to have particular visual impact, which may be more difficult to elicit from a novice photographer. The participants themselves may request guidance to create more impactful pictures. Photovoice studies that have incorporated this training report that it positively affected the participants, teaching them new skills and knowledge. This can be particularly important in projects designed to build research capacity among participants (e.g., in community-based projects).

Finally, it is appropriate to provide extensive training to focus group facilitators or interviewers. The primary data elicited in photovoice come from the discussion session; therefore it is beneficial to have facilitators well-versed in interview and discussion management techniques, group management, and the study goals to properly guide participants through the process. Often in projects involving youth, facilitators may need to take on mentoring roles and be more involved in the actual discussion than with adult participants, aiding them to understand concepts such as theme analysis and action planning. The level of skill that

interviewers and facilitators bring to the dialogue about the photos can have a large impact on the success of the group and is not a factor that the research team should treat lightly.

### 6.3. Theme building and picture taking

The technique of theme building (i.e., the topic about which participants are instructed to take photos) is frequently adapted to suit the needs and restrictions of each study. The ways that the themes are constructed and who is empowered to construct them depend on the project's length, the level of participant involvement, and the requirements of the funding organization(s). Because photovoice emphasizes participant involvement it is preferable to involve the participants in establishing the themes (Fournier et al., 2007). This empowers participants to have more direct influence on the research aims and outcomes. However, many project teams must establish themes before participant recruitment can begin. In such cases researchers have found it beneficial to keep themes very general so participants do not feel constrained. Often studies have asked participants to photograph their lives, highlighting both what they love and wish to change. Of course, in some projects the participants themselves do not feel equipped to develop themes, as with some participants in Wilson et al.'s project promoting youth engagement in social action (Wilson et al., 2007). In these cases the research team must take a more active role, possibly suggesting themes, and guiding participants through the analysis. As the project progresses and participants feel more comfortable researchers can then step back.

The next step in photovoice is the photography. Participants may need to obtain permission to take photos in their community, which may require multiple (researcher-created) consent forms for photo subjects. Once training is completed and photo themes are discussed, participants are asked to take pictures that they feel represent the themes, and then submit the cameras back to the research team for development. Previous studies encourage establishing firm timelines for this process as some participants can lose interest or find it difficult to sustain the effort required unless a deadline is clear. It is also recommended that participants be provided with pamphlets containing information about the purpose and parameters of the study to help inform of the project's goals and to safely take pictures in areas that might otherwise be off limits. In the current project, the research team also used the brochure as an opportunity to share details about the nature of the information behavior activities it was hoped that participants would capture, without leading them to photograph only specific tasks. The goal was to keep the document's tone light and engaging, given the undergraduate participant audience; here is a sample of the text:

*Our research team is investigating how undergraduate students find and use information for their classes. This is where you come in — we need your input! We want to know how you locate, access, and use information to complete an assignment. We need your help to identify areas that need to be improved to make it easier for all students to find the information they need.*

These pamphlets also can inform the wider community of the project, so that individuals not involved might gain an interest. They also may encourage discussion with participants about the subject being studied, which can inform subsequent interviews. Informative pamphlets also provide possibilities for snowball sampling if the research team is still recruiting.

### 6.4. Participant interviews and analysis

A commonly used method in photovoice is focus group discussion sessions. Use of focus groups brings together the concepts of Freire's empowerment education and feminist theory's cooperative

learning by having participants involved in a dialogue, sharing ideas, and learning from their collective experiences. An important aspect of photovoice studies is that learning is not limited to the research team, as participants also learn from one another. The focus group method allows participants to choose a small sample of photos from the entire set and present these to the group. The research team can guide the discussion through a series of discussion prompts. Often projects are structured to include multiple group sessions; allowing for a more longitudinal approach where participants' understanding of the subject and their relationship as a group can grow and improve over time.

Whether researchers use focus groups or individual interviews for this stage of the process, the way data analysis is used is one of the unique and most rewarding aspects of photovoice. Involving participants in data analysis further empowers them to take control of the project. The photographs are tangible artifacts of research data that serve as prompts for analysis with participants; this enhances the scope and depth of what might be discussed in a traditional interview. In focus groups, these photographic prompts allow individuals to engage with each other, particularly on topics that some individuals may not have considered previously. The technique for participant-directed analysis in photovoice involves inviting participants, during the focus group or interview sessions, to identify the common themes of their narratives and then codify and highlight what they consider to be the critical issues to bring forward to policy makers. This is an important step because it brings more equality to the researcher–participant relationship and, because participants prioritize the study findings, helps bring an extra layer of validity to the results. This type of relationship building is important to explore in studies of information literacy, as forging connections between librarians and students can also enhance the information literacy service context. By ensuring that evidence-based information literacy design decisions are grounded in students' perceptions, feelings, and personal explorations of the academic environment, librarians can provide appropriate and responsive services that best meet students' needs.

### 6.5. Dissemination and advocacy

According to Wang and Burris (1997), one of the most crucial aspects of a photovoice study is using the results for community advocacy and development; this goal situates the method solidly within action research traditions. Advocacy can take the form of exhibits that educate sponsor groups or the broader community on the study's findings, identification of issues to pursue, or recommendations of policy change. Also emphasized is the personal development of the participants themselves. Fournier et al. (2007) and Wilson et al. (2007) describe participants' positive feedback from their involvement in photovoice studies, including establishing connections with peers, learning new skills, feeling like agents of change in their community, or just feeling that their opinions count. Wang and Burris write that photovoice can create a sense of empowerment in communities that may have felt powerless before participating.

Interestingly, published papers outlining the method often fail to adequately measure community changes after a study has ended. While much of the writing on photovoice has acknowledged the need for the research to take place over a long period of time to assist in the developing nature of participants' understanding, few have written about the long-term effects or provided evidence of whether participants have used the skills they gained.

## 7. Advantages of the photovoice method

Researchers experienced with photovoice state that participants' responses are often longer and more detailed than would otherwise



be possible to capture (Harper, 2002). This is attributed to the photographs acting as memory prompts for the participants, allowing them to pull more details from the experiences than from memory alone. Also, using photo elicitation can make participants more comfortable with the interview process. Because everyone's focus is on the photograph rather than on the participant, this can help participants feel less as subjects of the research and more a part of the research team. Photo elicitation methods access different responses, reactions and emotions than verbal interviews alone. Harper (2002) suggests that people access deeper parts of their brains when looking at pictures. It does not require significant education to look at images and explain what is seen and what it means personally. In fact, that process can open up new avenues of understanding through the realization that images are not universally interpreted.

Photovoice requires that the photos are generated and selected for discussion by the participants themselves. One of the major benefits of this technique is that it heightens the validity of participants' responses. This is because the photographs used to elicit responses are not those taken by community outsiders (e.g., the research team or professional photographers); instead participants are empowered to choose those images they think are worthy of capturing. Participants then select the few they feel are worthy of discussion, and then prioritize the data generated through the dialogue. While the research team may still direct the overall themes explored in the study, the data produced are those elements chosen and vetted by participants. With increased participant participation in the research process validity also increases.

By emphasizing the need to involve the studied community in as much of the study's design as possible, photovoice presents interesting opportunities to incorporate study participants into the research team. Through training in ethical research practices and trusting participants to direct the focus of the study, participants are no longer simply passive data producers. This conscious attempt to equalize the power dynamic is intrinsic to photovoice, and while it is not practiced to the same degree in all studies, Catalani and Minkler (2010) found that more success is gained by active participation. Wang and Burris (1997) state that a goal of photovoice is to empower participants to transfer skills and knowledge they acquire in the study into their daily lives, including future initiatives and programs that help themselves and their community. Thus, photovoice projects carry with them the expectation of long-reaching impact, beyond the initial project timeline.

Another benefit of using group interviews with this method is the peer discussion and analysis that occurs. The ideas and images contributed by individuals are instantly analyzed and validated by group members, who prioritize key issues. This can be valuable for project sponsors and policy makers, giving them a clearer picture of what is important to the community. A further advantage is the potential these groups carry for creating new relationships amongst the participants (Killion & Wang, 2000). Initially the group may be made up of relative strangers; but, after continual meetings (encouraged by the method) and the sharing of personal experiences, successes, and issues, these strangers may find common ground and develop ways of supporting each other, inspiring group members to try new things.

By having participants take photos of their communities and activities, research is brought out of controlled settings. This helps make the data more realistic, no longer based on a series of prior assumptions that the researchers are asking participants to verify, but focusing on experiences or views that participants themselves view as important enough to share. Given the situational, context-based approach used in many information behavior studies, photovoice is an ideal method for grounding participants' experiences within the contexts they inhabit in their daily lives. Using photovoice in the workplace, in the classroom, in hospitals, or in individuals' homes, can provide an ideal complement to traditional interview approaches. The participants in photovoice must live with and analyze the ideas for longer than the

interview period. Choosing subject matter and taking the pictures serves as a preparation period, so when participants come to the dialogue stage, they have developed more personal understanding of the subject. Bringing the research out in the community also publicizes the project. If participants are asking to take individuals' pictures or to use buildings and facilities in their photography they share information about the project and their involvement with the wider community. This can help recruit others either as participants or as an audience for the study's results. It can also generate discussion between participants and outsiders, providing new ideas that participants may bring to the study.

An additional advantage of photovoice is the opportunity it presents for future advocacy. Through the involvement of policy makers, opportunities for dialogue are opened between them and the people they serve. This dialogue need not end with the study's completion. Participants can learn that they have a voice and a right to be heard, and that their opinions and perspectives provide valuable insights about how to run their communities. In addition, participants will develop new networks and contacts, providing opportunities to create positive change.

## 8. Limitations of the photovoice method

As with any method, there are limitations that must be considered before using photovoice. For example, participants might choose to take pictures without a subject's permission or in prohibited places. Such actions could compromise dissemination of the study results, introduce an enhanced level of risk to the ethics issues involved, and potentially restrict the usability of the data generated. To prevent such problems, it is crucial that participants be educated in ethical practices and promise to uphold the standards required. In the authors' experience, participants take their role in the study very seriously; once educated about the requirements of ethical practice and given the tools to make wise choices participants will document their information behaviors in appropriate ways. In addition, the research team and participants together must carefully consider whether chosen images portray someone in a potentially embarrassing light or whether publishing a particular picture may damage a relationship vital to the project. While researchers cannot control participants in the field, educating them about typical challenges and providing them with tools to avoid or mitigate these challenges is paramount. The most successful photovoice studies are those with the most participant involvement. However, almost all research initiatives receive funding by organizations with special interests, which can affect the study's design. These goals may conflict or be deemed unimportant by the community, causing problems for researchers trying to be community-oriented. In addition, time constraints associated with funding, and the common need to recruit participants after the initial study framework is developed, may challenge the researcher's goal to ensure that participants' viewpoints shape the design. By eliciting and incorporating feedback from participants throughout each stage, researchers may combat these challenges and ensure that participants do not feel alienated by the process. Balancing the goals of funders and communities may be complicated, but is vital in participatory designs.

Another limitation is that photovoice projects can be expensive. Every researcher must consider the cost of cameras and training for facilitators and participants. Projects are often structured over long periods of time with multiple interview sessions to allow the participants' understanding of the issues and their relationships to evolve so that they become invested in the project's outcome (Strack et al., 2004). This recommendation creates the need for longer commitments on the parts of those involved, and presents the need for participants to be compensated appropriately, which is potentially expensive and may be ethically challenging. Also, if certain communities or

organizations are to be a potential target, researchers must consider how to publicize their results and factor in the cost of displaying the material and possibly bringing participants to these events.

An obvious limitation is that, due to the visual nature of the method, a barrier is created to participation on the part of those with visual impairments. Researchers considering using photovoice need to examine whether the choice may exclude individuals with valuable perspectives because of their inability to photograph or review the visual images.

Another limitation of the process, which some research studies have discussed (Wang & Redwood-Jones, 2001), is that putting all the pressure to identify and create change on the shoulders of the affected community may create an atmosphere of “blaming the victim” for challenges facing a community. In addition, by focusing on a perceived voiceless population there is a concern that photovoice studies will not identify other groups as part of the development process. To combat these perceptions, researchers have tried to integrate different social groups to compare differing perspectives, such as hosting a focus group made up of community leaders, comparing the results with data gained from other methods, or using various social groups as participants.

One problem experienced by some researchers (Strack et al., 2004) is that policy makers may reject the results, so action outcomes will not be met. To mitigate this risk, policy makers must be involved and kept informed at all stages of the project. By involving agents of change in the study design, this limitation can be overcome; in the authors' project, the academic librarians who can enact change have been partners and co-researchers from the study's early design phase. They are also actively engaged in data collection, analysis, and dissemination of results and are already, in the study's final phase, leading to implementation of new information literacy instruction practices based on the findings. In addition, methods used to incorporate participants into the research process should emphasize the goal of empowerment and development of advocacy skills. It is also important to understand that research does not necessarily create direct change. More often, research helps to establish the available assets and problems faced by various communities. Participants develop skills to reflect and analyze their environment and behavior, and may carry these skills forward to create their own change.

## 9. Conclusion

The results generated from the triangulated methods applied in this study will create new appreciation for the information literacy competencies that students bring to postsecondary education, as well as the challenges of transitioning between high school and university contexts. The results are perceived by the study team as informative and robust, and are being implemented to support evidence-based design and delivery of information literacy instruction appropriate for the Web 2.0 world in which these students work and play. Thus, practical application is already underway. Implications for the design and implementation of teacher- and librarian-preparation, through formal educational programs, will also emerge from these results. Photovoice has allowed the research team to document important elements of students' experiences that would, otherwise, be very difficult to examine.

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## Appendix A. Photographs from participants who have been interviewed



Fig. 1. So much information but what do I really need?

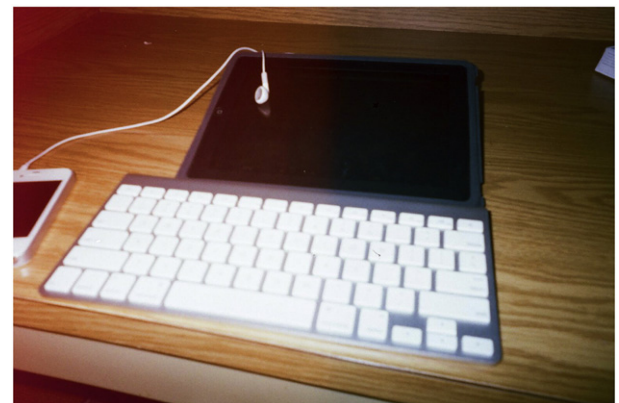


Fig. 2. Using an iPad instead of a laptop helps me to focus on one thing at a time.

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