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Documenting takes on recycling, honing rapid ethnographic skills: Transdisciplinary graduate student explorations in a rural U.S. southwestern campus community

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Abstract

While recycling has become a mainstream behavior in many urban U.S. environments, rural communities sometimes are not included or there is evidence that the bins for recycling are eventually heaved into the same landfill site. At the same time, a growing social pressure to recycle seems to upstage and overemphasize recycling at the expense of other, arguably more critical, aspects of the circular economy, namely reducing and reusing. In our work with graduate students from different disciplines, we have begun to have them document the feelings, thoughts, and values of others—their "takes"—on recycling in and outside their campus dining hall in their small, rural university community. These are short excursions into their community during workshops funded by the National Science Foundation. The workshops aim to develop, among other skills, qualitative research know-how and experience around environmental issues of growing concern. Research skills participants experience in the workshops include quick clipboard interviewing to develop approaching strangers in a friendly way, establishing rapport, note-taking, and deep listening. When students return to the workshop, they develop discussion skills, memo-ing, and inductive coding. The purpose of this paper is to document the perceptions of workshop participants on their feelings and thoughts about what they learned through this process of community-based, research-oriented experiential learning. This study uses rapid ethnographic assessment and co-interviewing conducted by the first two authors of this paper. Findings indicate that students evidenced a tolerance for diverse points of view and the variations of emotions people express as they share differing viewpoints on recycling. They expressed confidence in learning more self-reflexively about themselves. They were keen to share a sense of how they expanded their social skills in settings where they initiated and engaged in research tasks. Altogether, they embraced complex understandings of the human side of community action or lack of action vis-a-vis recycling in rural communities.

Introduction

Recycling behaviors across urban and rural communities in the United States often differ substantially due to various socio-economic, infrastructural, and cultural factors. Urban areas, with their higher population density, more accessible resources, and organized municipal services, tend to have established recycling programs. According to the U.S. Environmental Protection Agency (EPA), urban municipalities often have comprehensive curbside recycling programs, drop-off locations, and educational initiatives to encourage recycling [1]. In contrast, rural communities are challenged by remote or sparsely populated regions, funding constraints, and limited if any civil resources to plan and facilitate recycling programs. Rural areas require more time to travel greater distances, making recycling more expensive and time-intensive compared with urban counterparts; if there is a need for transfer stations because of distances, this also raises the cost of recycling. Throughout the U.S., there is a need for more reliable and uniform methods to assess the performance of recycling systems compared to what is currently available. By implementing standardized metrics, we might be able to better establish clear goals and monitor progress more effectively in rural and urban areas [1], [2].

This paper explores the challenge of developing and fine-tuning rapid ethnographic skills among graduate students who are tasked with learning firsthand if these or additional recycling challenges are faced in their community on a rural U.S. Southwest campus. The paper is a case study of the process of developing research skills among a small number of workshop participants from the psychology and engineering fields. The paper also identifies specific barriers that hinder widespread recycling in this context.

The graduate students are participants in a series of six three-hour workshops funded by the National Science Foundation. The overarching objective of the workshops is to foster transdisciplinary perspectives and skills; to this end, the workshops are co-designed and co-facilitated by a transdisciplinary faculty team that includes a sociolinguist, anthropologist, industrial engineers, and environmental engineers. The workshops facilitate and promote hands-on activities to learn, experience, and explore cultural self-awareness/competence, community-engaged practice, and qualitative research design. Our workshop goal was centered on developing broad social dimensions to STEM challenges, including stakeholder-identified needs, collaborative designs, and a participatory classroom culture. Because our graduate students brought with them a basic knowledge of quantitative data analysis, the transdisciplinary team of researchers focused on Rapid Ethnographic Assessment (REA) as the framework to introduce qualitative research skills in the short workshop format.

Rapid Ethnographic Assessment Methodological Framework

REA is an approach to ethnographic research that condenses the typically prolonged process of data collection, analysis, and interpretation into a shorter timeframe [3]. This approach is used when time and resources are constrained, yet there is a need for an in-depth understanding of a community, culture, or social setting for a particular issue or challenge. REA includes elements of traditional ethnography with pragmatic techniques aimed at generating actionable insights quickly. REA is characterized by a flexible and adaptive methodological design to identify pragmatic solutions to research problems. Its flexibility and adaptive nature make it ideal for transdisciplinary education and research, which requires an openness to new ways of knowing and habits of mind in the world [4]. The goal is not necessarily to achieve exhaustive insights but to generate enough understanding to inform decision-making or interventions. In some cases, REA may employ semi-structured interviews, focus groups, and direct observations to gather information quickly and efficiently.

We deployed REA both as content for our graduate students in our workshops and our research for this paper. For the latter purpose, we gathered contextual information about the workshop community to inform the design of future workshops, particularly any refinements that might further build transdisciplinary skills in the next generation of environmental justice professionals. The flexibility of REA makes it particularly useful in contexts that require real-time adjustments. Researchers can adapt their methods as the study progresses, responding to unexpected challenges or emergent patterns that could increase the robustness of the assessment. Since we are a transdisciplinary team and we are also teaching transdisciplinarity to our graduate students in our workshops, we are uniquely poised to stay open to emerging patterns of interest from each other's disciplinary expertise. Our iterative process contrasts with the linear, pre-planned nature of traditional ethnographic studies, which may not allow for such flexibility.

Data collection in REA is typically focused on high-priority areas that directly relate to the research objectives. Researchers may use purposeful sampling, as we have done, selecting

individuals who attended our 6-workshops and who are most likely to provide relevant insights. This differs from traditional ethnography, which often aims for a representative sample of the community or group. In REA, there is an emphasis on obtaining enough information from key informants to develop a preliminary understanding of the issues at hand.

In our workshops, the participants conduct a series of clipboard interviews in the university dining hall, soliciting student perceptions of recycling. This form of interviewing follows that of "street interviews" sometimes conducted in mostly U.S. metropolitan areas, such as for marketing purposes or to gauge social concerns by citizen groups or non-governmental organizations (NGOs). For the workshop participants, conducting short interviews in this way develops valuable skills in approaching strangers in a friendly way, making succinct introductions, developing professional rapport, deep listening, and note-taking while listening. When students return to the workshop 15-20 minutes later, they develop discussion skills, memo-ing, and inductive coding.

Participant observation is a central data collection method in REA, but due to time constraints, it was not a focal point in our workshops. However, our graduate students did focus on specific student seating arrangements and interactions in the university dining hall to gain insight into whom they might approach to raise questions about attitudes and practices around recycling. This targeted attention was an element they commented on in our data debriefing interviews. Moreover, we would be remiss not to point out that campus dining halls, which generate substantial amounts of waste, are an important focal point in any university's sustainability efforts.

The analysis process in REA is also accelerated; in this study, it was conducted in roughly 20 days over a 2.5-month period. Unlike traditional ethnography, which may involve months of detailed coding and thematic analysis, REA involves prompt, iterative analysis. Data is analyzed as it is collected, with initial findings informing subsequent data collection. This can involve using techniques such as qualitative software for coding interview transcripts or field notes, allowing researchers to identify unforeseen patterns quickly and adjust their focus if new insights emerge. Exploration of campus community members' views on recycling, including complexities and contradictions, were stressed throughout the six workshops.

By emphasizing that high-quality qualitative research brings forward every voice rather than seeks generalizability from findings, student researchers began developing a realistic understanding of the strengths and limitations of qualitative research. By focusing on the development of interviewing, active listening, rapport-building, and note-taking, as well as memo-ing and inductive coding of data, students grapple with the phenomenal world of research in a learning-is-doing mode. Finally, by understanding the emotional and attitudinal responses of campus community members students better understand themselves and provide a first step in experiencing interviewing as they and those whom they interview reflect on recycling and environmental issues. Hence, our research questions (RQs) for this paper are as follows:

- RQ1: What are the perceptions of workshop participants regarding the attitudes and behaviors surrounding recycling in their rural campus community?
- RQ2: How do workshop participants perceive their personal growth in social and research skills through the process of community-based research?

Classroom Context, Hands-on Research Skills Development

During the first workshop, participants received clipboards with a short script (Figure 1), which they briefly practiced with one another at the outset of conducting their first interviews. The generic lines in the script were used for each of the subsequent three interviews done in each of three workshops, but the questions differed.

Hello! Can I ask you a question about recycling on campus?

This is anonymous.

First off are you an undergraduate or graduate student?

If undergrad: Are you 1st, 2nd, 3rd, or 4th year? What is your major?

If Grad: What degree are you after?

What can you tell me about recycling on campus?

What's with that?

Can you elaborate?

Why do you think that is? Can you speculate?

Figure 1: Clipboard interview script.

In addition, the graduate students worked in small groups to reach a consensus on two more research questions. Through this process, they generated these two questions for inclusion in the interviews:

1. What do you think of first when you look at garbage (i.e., solid waste) in an unusual place?

2. Can you tell us about recycling on our campus and your hometown? What are your suggestions for our university?

During the workshops, students developed notetaking skills first with each other through in-class tasks where they used clipboards to take notes on each other's data collection notes. We used an inside-outside-circle organization of students around the perimeter of the room so that students would struggle less with background noise while they took notes. To organize this exercise, students counted off by 2. Ones were asked to form a large circle with their back to the wall of the room around the perimeter. Twos stood opposite ones facing them. When the facilitator asked, Ones shared their notes and Twos took notes. When the facilitator clapped, Twos rotated clockwise to a different person in the one group and took notes there. After a full circle, Ones and Twos changed roles. Ones took notes and Twos shared their notes. The exchanges were oral-aural to improve deep listening and notetaking and rapport building when requesting a speaker to slow down or repeat information.

Students also developed memo-ing as they coded their data and added it to a table with other students. Inductive coding provided a starting point for analysis with student-collected data.

After the completion of six workshops, the workshop participants were individually co-interviewed by the first two authors of this paper, who are also the designers and facilitators of the relevant workshops. The co-interviews were conducted through Zoom meetings. Velardo and Elliott [5], [6] "found that co-interviewing facilitated social support, learning and connection between the researchers and participants." Ten questions were asked during the co-interviewing process, which were separated into two major categories. The interview transcripts generated by Zoom meetings were analyzed to answer the two above research questions. Debriefing interview questions asked of our NSF workshop participants in reflecting upon their experiences as research interviewers include:

1. How did you feel conducting interviews with people about recycling on campus? Were there any challenges you didn't anticipate? Can you elaborate?
2. What did you learn about your social or communication skills during the interviews? Did you find it easy or difficult to engage participants in a conversation about recycling? Can you illustrate your points for us?
3. Did you notice any personal biases or assumptions you had about recycling or the people you interviewed? Do you think certain biases might have led to who you selected to speak to? How did you handle those during the interviews? Can you elaborate?
4. How did you prepare for each interview? Did your approach change over time as you gained more experience? Could you elaborate?
5. Was there any moment during the interviews that made you realize something about your own perspectives on recycling? Please share any other feelings or thoughts you had or have now.

Questions about our campus community:

6. What did you learn about how the campus community views recycling? Were people generally aware of the recycling bins, a lack of bins, or was there confusion or misconceptions? Can you give details?
7. Did you notice any patterns in the responses from different groups on campus (e.g., undergraduate or graduate students)? How did their attitudes or behaviors around recycling differ if at all?
8. Were there any surprising or unexpected insights you gained from the interviews regarding the effectiveness of a future campus recycling program?
9. How did the campus community's level of knowledge about recycling influence your perspective on how well the program in the future might work?
10. Based on what you learned from the interviews, what do you think could be done to strengthen a future recycling program on campus?

Description of Participants: Graduate Student Workshop Participants

In this iteration of the NSF program, ten graduate students participated in the workshop series, including conducting the clipboard interviews and the debriefing co-interviews with the workshop facilitators. Since the workshops are not credit-bearing or associated with a credit-bearing class, we selected the ten graduate students through open applications and based on their availability to attend the workshops. The students included Master's and PhD students in Psychology, Counseling Psychology, Computer Science, Industrial Engineering, and Environmental Engineering. The cohort included both regional and international students, with 4 females and 6 males. Their experiences ranged from living in very small towns to large

metropolitan areas. Some had lived for many years in the community surrounding the campus and were familiar with local waste management and recycling practices, while for others it was new knowledge. The cohort was multilingual; for some students, English was a second language. During the debriefing co-interviews, aspects of these personal characteristics emerged as influential in their experiences conducting interview-based qualitative research.

Discussion of Findings

We organized our discussion of our findings according to our research questions. Graduate student interviewers provided many clear signs of their self-reflective learning trajectories as qualitative interviewers, as well as generating specific content knowledge on the topic of recycling in the rural campus community.

RQ1: What are the perceptions of workshop participants regarding the attitudes and behaviors surrounding recycling in their rural campus community.

Many workshop participants suggested the process of interviewing others about recycling led to increased personal concern about environmental issues, with some interviewers feeling helpless about the extensive use of plastic. The graduate student interviewers found that while many people cared about the environment and expressed a willingness to recycle there was often a gap between expressed concern and actual behavior. Behavior was commented on by the interviewees as often not measuring up to their concerns, which Tesch and Kempton found was true of many people in their research [7]. Some of the campus community members interviewed were found to be very knowledgeable and passionate about recycling while others seemed indifferent. Many of the graduate student interviewers commented that they realized the complexity of recycling beyond their initial assumptions and identified the need for a better recycling infrastructure and information accessibility.

Most workshop participants agreed that the campus community has awareness and consciousness about recycling, but that there are not enough resources for implementing recycling in the campus.

For example, Sonu expressed “I think I realized that the awareness and the consciousness is definitely there. But we just need to push a little more as an institution, to make it a practice.”

Alex also expressed “Campus students. I think they are open-minded. I think that's what their perspective is like - they're open to it. And most people do care.”

Most workshop participants did not notice any different patterns in the responses from different groups, such as graduate and undergraduate students, males, females, etc.

Sabi reported “The main thing I noticed is that everyone that I talked to was in some form interested in recycling. I don't think there was anyone that really was per se against having more trash cans or against having like more be done for the community.”

However, one workshop participant pointed out that undergraduate students may not have as strong an opinion as graduate students or faculty; as Deepal reported, “I don't say they are not into it, but they don't want to do it as of now. Their mindset is not still thinking about the society, they are into their own world.”

Several workshop participants reported that students interviewed by them suggested to use social media to promote recycling and increase the awareness of the campus community. For example, Ariel reported “I think we all got the typical one about getting more recycling bins, but there was one that really I wasn't expecting it. And it was a guy saying maybe doing kind of like a social media thing.”

At the end of the interview, workshop participants suggested different approaches to strengthen the recycling program on the campus.

Ariel suggested “I'll say also the recycling bins to be more visualized, I guess, or have some type of visual to help them. I don't know like a basketball or something.”

Several workshop participants suggested focusing on educating people. For example, Saloso expressed “more education on. [Y]ou know why you should recycle the different things that you could recycle, how to recycle things like that, I think, would very help, and how it packs, impacts the environment.” Jalen expressed “In the Univ. classes like have, like some small like part of the you know, curriculum, or something over like recycling on campus.”

Sonu also suggested “I wouldn't say a presentation, but some form of an awareness program of all the discussions that we've had and all the posters that we made. I think maybe if we put up a board or a couple of boards around the campus. Of all the things that we've discussed, or all the suggestions that we've come up with around the campus, I think it could generate more curiosity and awareness. And we could actually have more people as the participants into this program.”

Resources, such as funding from the university level, are also very important, as suggested by Alex: “Firstly, funding for any higher official. Provide that financial support and help get things started.”

The suggestions for more funding and education, as well as communication of the value of recycling via social media to target rural communities and students of all ages chimes with findings in scholarship and research [8], [9], [10]. While one study among low-income Hispanic women in Southeastern Texas found “that women who recycled identified more with their native language and culture (Mexico, in most cases) than with U.S. language and culture” (p. e34469), “women will recycle if they know what to recycle, the reason for it (it saves landfill space), and do not believe it is a time burden” (p. e34469) [11]. However, in Texas “the political organization, will, and power to act [on data amassing through scholarship and research] are dangerously limited” (p.649) [10] in the face of pro-business and limited regulation policies. While it is important to look at the scholarship on the divisiveness of the political will and policies that constrain educational and social media projects, it is important to remain hopeful even if the change is incremental. It can give students a critical edge to their hope, which may strengthen the realism with which they design social media strategies and online or offline educational events.

RQ2: How do workshop participants perceive their personal growth in social and research skills through the process of community-based research?

Many of the workshop participants highlighted their personal development as interviewers. Students noted that the experience of mentally preparing to interview strangers from their own academic community was an opportunity for personal growth, allowing workshop participants to step out of their comfort zones and practice communication skills while reflecting on their own views of recycling and the views of others from their shared academic community.

Many of the participants reflected that the newness of soliciting interviews as a skill or research practice was a nerve-wracking endeavor. Sonu reported, “I was a bit hesitant and skeptical because I consider myself a social person, but I was definitely a little hesitant and worried about approaching strangers and asking them questions.”

The interviewers commented on what they perceived as the impact of their personality characteristics and their social communication skills on the interview experience, a forefront

consideration in ethnographic research [12]. Several indicated that they identify as shy or introverted. They recognized that, for them, it was something of a personal challenge to initiate conversations.

For example, Ariel voiced, “I've–I always had this thing where I guess I'm shy or I'm nervous, and I don't [interact socially], but if I have to, I get it over with, I guess. I need that impulse or a little push, I guess, to do stuff.”

Amal expressed, “I learned that I'm really a shy person, and I'm a person who stays in a small circle.”

Amal’s and Ariel’s views are similar. However, they also noted improvement in their ability to foster an open, welcoming interview space and engage with interviewees over time, key characteristics in interviewing techniques [13]. They described growing more comfortable and confident as they conducted more interviews, becoming accepting of the possibility that some people might decline to participate or not give their participation their “all.”

Sabi conveyed, “At first, interviewing, I felt at 1st it was a little awkward. I'm not going to lie, but then I got a little more used to it, and at the end I was able to do it more fluently. So, I personally don't like to talk to a lot of strangers. It's not something that I do. I don't go up to people, and I'm like, “Hey, what's up?” I like to talk with a group of friends normally, and I'm very comfortable with that. But it was definitely a new experience, and once I did get used to it, then I was able to kind of like it.”

Harkening to the ethnographic technique of participant observation, some interviewers expressed concerns about approaching certain groups, such as women or groups of people, due to not wanting to appear intrusive or feeling uncomfortable. These observations provided an opportunity for the interviewers to pause in a moment of reflection upon the role that their own identities, assumptions, and even biases bring to the research process, as Finlay [14] and Coffey [15] have noted. This led to acknowledgment and honest contemplation on the impact of a researcher in the processes, project outcomes, and knowledge produced [16], [17] and the ways they might mitigate that [18].

Sonu expressed, “I think again if I have to be very, very honest here, the 1st time I went out to do a couple of interviews I realized that men were a little more open towards giving answers and letting their meal be disrupted compared to females and a lot of them when I approached females they were like, no, I'm sorry we can't do it. So maybe it kind of affected my course of choices later on, where I felt that okay, guys were a little more open towards giving answers and letting me interrupt their meal.”

Saloso voiced, “I think I was more comfortable interviewing individuals versus a group: I think that was a bias, because I could have interviewed groups, but I thought that would be too crowded, and in my mind I wouldn't be able to get as much because everyone would start talking at once. How would I take your notes of a group? So I went to individuals. So I think that was one of my biases.

There was a general awareness of the need to avoid biases and assumptions, with some interviewers using body language cues to gauge willingness to participate. The interviewers used various techniques to engage participants such as compliments, framing questions as students helping students, and adjusting their approach based on the interviewee’s receptiveness [19]. Challenges included dealing with uninterested or sarcastic respondents and learning to extract meaningful information from brief answers.

Overall, the experience of conducting brief clipboard interviews seemed to resonate with graduate students who initially had little to no experience with interviewing strangers. Indeed, many reported never experiencing being interviewed in a similar way.

Ariel reported, “So, it wasn't hard. It was just hard starting to interview. It wasn't really difficult to make people talk and to ask them questions, just to find, I guess how to approach it without being too intrusive. Or, like, without messing with them too much, I guess.”

Jalen shared, “the actual interviewing itself was kind of difficult at times, because of where we were doing it and because it was with people who were eating or on their phone. It was about keeping it short. I kind of had to pull information from the interviewees, so that part was hard, but once I got into it and once we kind of got into the deeper questions, it was kind of easy.”

Conclusion

With the need for more nimble, creative, and convergent solution-seeking processes forefront in mind, this paper presents one example of incorporating Rapid Ethnographic Assessment elements into STEM graduate education as a means to cultivate transdisciplinary research skills. REA offers a team-based, collaborative approach to quickly collect, analyze, and interpret data about an issue toward actionable results. We focused upon a prevalent and pressing concern within our campus community and our rural region - the growing problem of waste and inconsistent recycling services. Over a series of six workshops, we introduced the graduate student participants to a suite of skills that can gather diverse viewpoints and generate rich qualitative data within a limited timeframe. These skills specifically included conducting clipboard interviews, approaching strangers in a friendly way, establishing rapport, note-taking, deep listening, discussion skills, memo-ing, and inductive coding.

The results and impact of this experience in community-based, research-oriented learning is two-fold. First, the graduate students conducted rapid qualitative interviews with campus community members regarding their attitudes toward and knowledge of regional recycling practices. In short order, this has created a database of qualitative responses to the issue. The responses are a lens into the collective climate of perception on campus regarding recycling. The participants were self-reflective on how this knowledge both met and disabused some of their preconceived expectations, ultimately providing a stronger rationale and framework for any future decision-making regarding recycling on the campus and in the rural community. Such initial REA data might form the basis for future charettes or campus action workshops.
It also provides the foundation for targeted actionable items, such as university leadership outreach, campus awareness campaigns, educational material development, social media marketing, and other collaborations.

In the workshop debriefings, we emphasized that their findings in this regard is an exemplar of the research benefits that can come from deploying a Rapid Ethnographic Assessment (REA) model toward a particular issue. Highlighting the strengths of a REA model, the workshop participants were able to collaborate, design a mode of inquiry, collect data, analyze, interpret, refine, and generate findings on a particular issue – in this case recycling – all in the matter of six 3-hour workshops.

For the workshop participants, not only did they see the real-time application of the REA model and generate meaningful data regarding campus recycling, they also developed a new research skills toolkit. They repeatedly practiced designing qualitative interview questions,

conducting interviews, note-taking, and memo-ing. They refined their interview skills through multiple iterations. In the process, they self-reflected upon their own attitudes toward this research methodology and their self-development journey toward feeling both comfortable and proficient in this methodological space.

Future iterations of the workshop series will provide opportunities to extend this model in new - and additive - directions. For instance, while this workshop series concentrated on the methods and outcomes that can emerge with short interviews, workshop series in the future might focus upon the data that can emerge from participant observation, as just one example. This methodology would involve convergent skills, such as notetaking and memo-ing, but also new skills like interaction analysis. Future research could ascertain how participants describe such an experience in their debriefing interviews, as compared to the clipboard interviews. One pressing inquiry would be which skillset is more likely than the other to foster the transformative mindset and toolkit harness the deep pools of knowledge, training, methodologies, and experiences held across segments of society.

The successes of the REA application in this workshop design carries the potential to be of widespread benefit. First, the freestanding workshop model is one which can be adopted and scaled across a range of audiences, whether it is undergraduate or graduate students, community groups, governmental agencies, NGOs, or public-private partnerships. This model carries the potential for a more expansive approach to environmental education, rooted fundamentally in a framework that emphasizes community-based journeys toward solutions.

For the workshop participants, particularly if they are coming from STEM fields, the training in qualitative research methodologies might expand the scope of their skills in appreciable ways. By deploying these new skills in real-time, toward a specific community-centered issue, the participants both experience and see the impact of their research inquiry. They are able to gather data about a topic meaningful to their community, interpret, and disseminate that data toward new solution-seeking processes. The speed of results and information-sharing allows for decision-making based on real-time data, which has the potential to be more meaningful in its timeliness and applicability. Perhaps more fundamentally, the multi-vocality of perspectives, experience, training, and resources that are interwoven through this model fosters the transdisciplinary approaches needed to address the complex socioenvironmental and sustainability issues facing our community today.

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