

# Cookies as agents for community membership

Idaykis Rodriguez<sup>\*</sup>, Renee Michelle Goertzen<sup>\*</sup>, Eric Brewster<sup>+,\*</sup> and Laird Kramer<sup>\*</sup>

*Florida International University  
Department of Physics<sup>\*</sup> and Department of Teaching and Learning<sup>+</sup>  
Miami, FL 33199*

**Abstract.** When becoming a member of a community of practice, a novice must adopt certain community norms to participate, and these include the social norms of the group. Using the analytical perspective of Legitimate Peripheral Participation in a Community of Practice, this paper explores the social role of cookies as agents for community participation and membership in a physics research group. We analyze data from an ethnographic case study of a physics research group weekly research meeting. The mentors bring cookies to each meeting and view the cookies as a token of appreciation for the graduate students' work. These cookies take on a subtler role of initiating guests and students into scientific conversations and participation. Via the cookies, members also share personal histories and stories that help members strengthen their membership. The study of social norms in this research group is part of a larger study of physics expert identity development.

**Keywords:** communities of practice; graduate students; apprenticeship; social norms.

**PACS:** 01.40.Fk/ 01.40.Ha

## INTRODUCTION

For a physics graduate student, learning is a social process of a newcomer becoming a member of a community [1]. In the social milieu of classes, laboratories, and study groups, a physics graduate student primarily learns “the trade” from being part of a physics research group. Like any “trade,” the physics enterprise renews itself by the preparation of new graduate students.

We take the view of learning as the social participation within a community [2-4]. To better understand how the community prepares and welcomes the new graduate students to conduct research in their specific subfield, we turn to the analytical framework of Wenger's Community of Practice [5]. Within that framework we will specifically consider the social norms and practices group members adopt in their specific subfield, and how these social norms, such as sharing food, contribute to the membership in the physics research group and the graduate students' learning experience.

### Communities of Practice

A community of practice in its simplest form is a group of people that have come together to share a common interest. Communities of practice can be as simple as a book club and as complex as scientific endeavor of the physics enterprise. Wenger [5] uses the construct of communities of practice to further explain how learning is socially constructed through

engaging in the common practice and identifying with the practice. Learning to become a member of the physics research group is a socialization process that entails relations among group members, group artifacts, members' identities, and normative practices.

Wenger [5] refers to a community's normative practices as the shared repertoire, which “includes routines, words, tools, ways of doing things, stories, symbols, concepts that the community has produced or adopted in the course of its existence”(p.83). Although this can be applied to the physics enterprise in general, a community as represented by a research group also shares a repertoire. Within the group's repertoire of computer programs, simulations, research papers, and laboratory equipment, there are also social group traditions and practices such as sharing food, which can become an important aspect of group membership.

### Food and its Meaning

Anthropologists, sociologists, and historians have extensively studied food and its meaning. Their studies range from how essential food is to human existence to the economic and political value of food [6]. The study of what we eat and why we eat it, known as *foodways*, has demonstrated that food can be an identifying characteristics of groups [7]. By association, food becomes an expression of ethnic, national, or group identity. Food and how groups use it, define the group's identity and boundaries, serves as a medium to communicate between group members, and is a way to generate cultural connections [7].

In this paper, we take the communities of practice theoretical framework and the guidance of foodways research to examine how cookies shared in a physics research group meeting have taken a role in facilitating social interaction between group members, and have become a symbol for group membership

## **METHODS**

Data were collected as part of an ethnographic case study [8] of a physics research group. The ethnographic case study includes participant observations and video recordings of the group's weekly research meeting for two periods, January to June 2011 and January to February 2012. We also conducted hour-long interviews with each participant throughout the data collection period.

The first author of this paper is the main research investigator of this project and was present at all the research meetings during data collection. She is a physics graduate student, and we acknowledge that the investigator's perspective, as a physics graduate student, is both a strength and limitation of the study. Her identity as a graduate student influences how the participants interact with her and conversely how she interacts with the data collection, analysis, and interpretation. This interaction is referred to as "reactivity" in qualitative research [9]. To address any validity threats related to researcher bias, we established three validity measures throughout the research project. The investigator practiced "reflexivity," the process of reflecting in a journal about how the researcher reacts to the data and analysis [10]. We also practiced triangulation; the use of multiple data sources to confirm emerging findings. To further ensure internal validity, we used peer review of data analysis, in which multiple physics education researchers reviewed the evidence to challenge possible claims with alternative interpretations [10].

### **Participants**

The research participants are part of a theoretical and computational biophysics research group at an American university. The research group is housed within the physics department and they conduct research on theoretical and computational models of protein structure formation. The group is composed of two university professors, Matthew and Prakul. (All names are pseudonyms) They mentored three graduate students and one undergraduate student during the time of the data collection. Udit is a fourth year graduate student, Hal a third year graduate student, Ike a second year graduate student, and Louis is an undergraduate student in his senior year. The group

also includes a post-PhD graduate instructor, Omar, in the meetings.

### **Meeting**

The participant group holds weekly research meetings every Friday afternoon. Research meetings last about four to five hours. The meetings are structured so that each student is given time to present on their progress during the week and to seek guidance on the challenges they face. During the meeting, professor Matthew brings packages of cookies to share with the students and visitors. If professor Matthew is not able to make the meeting, professor Prakul brings the cookies that day. The cookies are a prominent part of the meetings as seen from the fact that they are present and talked about in all of the observed meetings.

## **ROLE OF THE COOKIES**

Professor Matthew communicated in his second interview in February 2012 that the cookies in the meeting are a nice token of appreciation towards the graduate students. "It's just a nice thing to do to show that I appreciate that they [graduate students] are working hard." However, we will show how the cookies play a subtler role than afternoon treats. They become agents for group participation and for integrating members' cultural identities as part of community membership.

### **New participant initiation**

Research meetings, at the time of the data collection, are attended by the two professors, the instructor Omar, the three graduate students, and the undergraduate student, Louis. Visiting students interested in joining the research group are first offered cookies as a way of initiating participation in the group meetings.

One Friday afternoon in late January, an undergraduate student is visiting the group meeting. At the beginning of the meeting, students are setting up the projector when Matthew notices the visiting student. Prakul mentions to Matthew that the undergraduate student, Oscar, is visiting the meeting for the first time to see if he would be interested in joining. Matthew welcomes Oscar to join the meeting every Friday if he would like. A few minutes later, both professors step outside the room and only the students and post PhD-graduate instructor Omar stay behind with the visiting undergraduate student. At this moment Omar welcomes the new student and offers him cookies. (Square brackets indicate overlapping speech).

1 *Omar*: <looking at the new student> Then Prakul said that you are thinking into join this group?  
 2 *Oscar*: Yeah, [I was-]  
 3 *Omar*: [You can] start with the cookies <points at the cookies on the far side of the table>. Its- You have to past that test. If you eat cookies then you can stay [if not...] <shakes head no>.  
 4 *Hal*: <smiling> [if you] like cookies than you can stay. <Oscar takes cookies>  
 5 *Omar*: <Laughs>. Other times it's harder. You had to cut your hands <motions his right finger to cut his left palm> and then push them together. <claps hands together>. That was a little painful. <everyone smiles and giggles>  
 6 *Louis*: Brotherhood blood exchange.  
 7 *Omar*: <nodding> Brother of... of blood no?  
 8 *Louis*: Yeah, brotherhood of blood...

Omar provided a humorous invitation to Oscar to eat the cookies, but Omar has perceived eating the cookies as an initiation rite. The cookies are a common part of the research meetings; they have become a normative practice of the meetings. In other meetings, many of the guests that are offered the cookies do decline them and still join the meeting, yet the cookies are perceived as agents to participate in the research meeting. In this clip, Omar compared the eating of cookies to the ritual of becoming blood brothers, which means to swear loyalty to the others by exchanging blood with other participants. Thus, Omar perceives eating the cookies as an induction into the group.

The cookies are a simple way of representing group membership. Louis is known for not regularly eating the cookies. Participants refer to him as not having a sweet tooth. But occasionally he picks up a cookie and eats it. On a particular day, Louis eats a cookie while presenting his weekly progress. Before Matthew responds to Louis regarding his progress, he says, "Yeah ok, but I just can't believe he is eating a cookie." Everyone smiles and the professor jokingly comments, "Oh how we've turned him." This is an example of how the cookies not only facilitate entry into the group, they are also perceived to be a staple of group membership.

### **Facilitate sharing of personal histories**

As described earlier, a community's repertoire includes routines and traditions that have developed over time. For example, this biophysics research group uses common computational software in the field. The research group also argues, justifies their arguments, and contributes research to the community. Along with those actions and concepts commonly used in the discourse of the practice, the community repertoire

also includes "ways by which members express their forms of membership and their identities as members" (p 83) [5]. Members of this biophysics research group do not form their identities entirely from the physics community of practice. These biophysicists are young or old, male or female, and from different countries and cultures; their identities extend across community boundaries and multimembership [5]. To consider members' identities to be a collection of separate memberships in different communities is an oversimplification [11]. Wenger explains that such a view, although useful in explaining meaning, overlooks how various forms of membership can influence and enrich, as well as conflict with our overall experience.

In the biophysics research group, the custom of sharing cookies has become a way to share and express members' multimembership in different cultures. From time to time, Matthew brings in cookies with different flavors, curious names, and varying styles. In the following episode, Matthew brings in "Dulce de Leche" flavored wafers. Dulce de leche is a Spanish sweet made of sweetened milk and known for its caramel flavor. Matthew brings in the wafers at the beginning of a meeting where there is a visiting professor. We note that the first author and research investigator is Hispanic and nicknamed Ida.

1 *Matthew*: We are missing a couple of people, which means that they don't have access... they don't have access to the cookies as quickly also. <he sets down two packages of cookie wafers on the table> <then he address himself to the visiting professor>. I'm going to let you introduce yourself in a moment. <turns to Louis and Omar holding one cookie package> Uhm, for you two. Both Hispanic and French right. This is a flavor for both of you. I mean it's Spanish. [But don't] you have some thing similar in France? <glances at Louis>.

2 *Omar*: [Yeah.] <he turns to Louis> And you understand Spanish?

3 *Louis*: Yeah...We-

4 *Matthew*: You don't have a caramel like..

5 *Louis*: Oh yeah we do.

6 *Matthew*: <pointing at the cookies> I mean that is basically caramel.

7 *Louis*: Yeah but we call it this. <points to the package>

8 *Matthew*: You call it that? <points to the wafers>

9 *Louis*: [Yeah.]

10 *Matthew*: [Oh] exactly the same. Cause it sounded like you said you've never seen it before.

11 *Louis*: Oh no, no, no, no, no. I seen it but--

12 *Matthew*: Oh but you don't have a sweet tooth. <smiling> But please Omar that one I got specifically for you.

13 *Omar*: Thank you so much [inaudible]  
14 *Matthew*: [And, and] Ida also. <Matthew exits>.

In this episode, we see that in the first verbal turn, Matthew has brought a caramel cookie, which is a flavor common to French and Hispanic cuisines and has brought them especially for Omar and Louis. Omar is Hispanic and Louis is from France. In bringing such cookie wafers, Matthew has acknowledged Omar and Louis's cultures and manifested the opportunity to share their culture by sharing specific cookies. During turns 2-10, the participants negotiate whether the French have a similar flavor as dulce de leche or caramel. In this negotiation, Matthew learns that the French call it by the same name as the Spanish. In turns 12 and 14 Matthew lets Omar and Ida know that he brought the wafer cookies especially for them, since they are Hispanic and that flavor is familiar. This interaction conveys to Omar and Ida that their ethnic group culture in the Hispanic community has influenced the shared practices of the biophysics research meeting.

## CONCLUSION

As the graduate students develop their membership in the biophysics research group, they learn academic and professional "tools of the trade" used by members of this group. Some of the group's norms and customs are also social. We have shown how the social experience of sharing cookies in the research meeting is not only a gesture of gratitude but also a way of initiating new members into the community. Sharing different kinds of cookies also strengthens current members' participation by acknowledging their multimembership to other communities of practice such as the Hispanic community. In addition, the sharing of cookies sets a tone for the research meeting that is informal and open to productive learning [12], instead of critical and threatening as some research environments can become.

As a customary practice of the research meeting, sharing food in this group has taken up meanings related to group membership. Like the cookies for this research group, the sharing of food can become a way of facilitating cultural connection between members [7]. This research group uses food as one of the ways of defining membership and inclusivity. However, there are many other ways membership in a group can be established, and as a construct, membership involves the perceived belonging of the individuals, the group's boundaries, and their negotiation within the community of practice.

## ACKNOWLEDGMENTS

We would like to thank the FIU PER group for their feedback and the university biophysics group for participating in this ethnographic study. This study supported by NSF Award # 0802184.

## REFERENCES

1. Golde, C.M., *Beginning graduate school: Explaining first year doctoral attrition* (Wiley Online Library, San Francisco, 1998), 1998, p. 55.2.
2. J. S. Brown, A. Collins, and P. Duguid, *ER* **18**, 32-41 (1989).
3. Rogoff, B., Matusov, E., and White, C., *Models of Teaching and Learning: Participation in a Community of Learners* (Blackwell, Oxford, UK, 1996).
4. Lave, J., and Wenger, E., *Situated learning. Legitimate peripheral participation*, Cambridge: Cambridge University Press, 1991.
5. Wenger, E., *Communities of practice. Learning, meaning, and identity*, New York: Cambridge University Press, 1998.
6. Mintz, S. W., DuBois, C. M. *Annu. Rev. Anthropol.* **31**, pp. 99-119 (2002).
7. Brown, L. K., Mussel, K., *Foodways in the United States: The performance of Group Identity*, Knoxville: University of Tennessee Press, 1984.
8. Patton, M. Q., *Qualitative research and evaluation methods*, 3rd ed., California: Sage, 2002.
9. Maxwell, J.A., *Qualitative Research Design: An Interactive Approach*, 2<sup>nd</sup> edition (Sage Publications, Inc., Thousand Oaks, CA, 2005).
10. Merriam, S. B., "Assessing and evaluating qualitative research," in *Qualitative research in practice: Examples for discussion and analysis* edited by S. B. Merriam, New York: John Wiley & Sons, 2002, pp. 18-33.
11. Wenger, E., *Organization*, **7** (2), 225-246 (2000).
12. Toker, U., Ph.D. dissertation, North Carolina State University, 2003.