

# By Invitation Only: The role of personal relationships in creating an inclusive makerspace environment

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## INTRODUCTION

This paper explores how students first discovered Semaphore Studio307, a makerspace in the Faculty of Information at the University of Toronto, and the role that personal relationships played in encouraging them to both enter and continue participating.

At last year's International Symposium on Academic Makerspaces, Alexis Noel, Lauren Murphy and Amit Jariwala presented their work on sustaining diversity and inclusion in their makerspace by removing barriers to entry [1]. They identify instances of inadvertent exclusion, and the techniques they used to promote inclusion - providing training and tours, offering targeted events or closed nights, promoting diverse interests outside of engineering, and increasing student leadership roles. To their work, we, the authors of this paper, would like to add the use of personal invitations and targeted recruitment to this list of tactics. To do this, we will demonstrate the effectiveness of active, personal invitations in encouraging inclusivity and discuss the challenges presented by relying too heavily on this recruitment method.

### A. SITE

Semaphore Studio307 (hereafter referred to as "Studio307") is a student-run studio workspace within the Faculty of Information at the University of Toronto. It serves graduate students in the following programs and concentrations: Museum Studies, Library and Information Science (LIS), User Experience Design (UX), Knowledge and Information Management, Information Systems and Design (ISD), Critical Information Policy Studies (CIPS), Culture and Technology, Book History and Print Culture, and Archives and Records Management. In this way, it differs from academic makerspaces in engineering or applied design departments, or spaces intended to serve entire university communities. The focus at Studio307 is small-scale fabrication, prototyping, critical making, exhibition-building, and skills development for current and future librarians, and information and museum professionals. For example, rather than offering a general introduction to Internet of Things technology, we offered workshops that also touched on culture and privacy issues, and how to integrate this technology into exhibits. Or, rather than just an introduction on how to operate 3D printers, we also provided workshops on how to maintain and repair 3D printers targeted at future library and museum professionals who may require a stronger command of the technology.

Two students staff the single-room, 300-square-foot space (at the time of the study, the authors served as the student staff). Staff members oversee open hours, develop and run

programming, and manage the space on a day-to-day level. Funding and equipment are provided by: Semaphore Research Cluster; TechFund (a student levy-funded committee); the Inforum (the library within the Faculty of Information); and the Faculty itself through space and institutional support. This past year, 2016-2017, was the pilot year for the space.

Students participate in the space through regular, staffed drop-in hours (16-20hrs/week) or structured curriculum in the form of workshops, lectures, or clubs organized around common interests. Some students also have 24-hr key-fob access to work on larger projects.

### B. METHOD

Because the focus of this work is on the students who use this space and their experiences, it was conducted as an exploratory, qualitative study using an ethnographic approach [2]. The primary data gathering method was participant observation [3]. For an academic year, the authors worked in Studio307 as work-study employees and researchers. Raymond Gold, who identified potential issues within participant observation, would likely classify this arrangement as Participant-as-Observer, where the researcher is a part of the group being studied [4]. There are challenges associated with this type of opportunistic or insider research, but there is also value in regular, day-to-day, face-to-face contact with research participants [5][6][7]. Employment in the research site provided that access and opportunity [8][9].

Semi-structured interviews were also conducted with students using object elicitation, a variation of photo elicitation when an object or photo is used to elicit responses from interviewees and help the flow of the interview [10][11]. Robert Emerson, Rachel Fretz, and Linda Shaw's methods for writing, coding, and analyzing jottings and field notes were then used to generate theory from observations and transcripts, alongside Gery Ryan and Russell Bernard's tactics for identifying themes [12][13][14].

This particular theme, *by invitation only*, will be presented here using what is called an excerpt-commentary unit [12]. This method requires researchers to move back and forth between the world they are presenting, their analysis, and existing scholarship or research. The goal is to present a work through informants' words and researcher observations in the form of excerpts and analysis in the form of commentary.

### C. SENSITIZING CONCEPTS

To help understand why personal relationships were so relevant, we will rely on Bethan Davies' argument that obtaining and maintaining access to a community or space is often

not a choice and instead is dependent on existing structures, members, and relationships [16]. In her work, Davies challenges how Lave & Wenger's concept of legitimate peripheral participation are used to model how new participants discover a community and then move from its periphery to its core [17][18], but without fully considering existing barriers that may affect an individual's ability to choose their level of involvement.

### THE POWER OF THE INVITATION

Most students discovered Studio307 through a face-to-face invitation. It was our most successful recruitment method. Of course, we also created a website, sent out newsletters, and put up posters, but it was the Faculty orientation tour stops, class visits, professor outreach, and existing relationships that pulled people in for the first time. For example, here we hear how a professor's encouragement and a reason for being there are what inspire Pauline, a first year Book History and Print Culture student, to enter the space to use the 3D scanner:

**Pauline:** I had talked to Professor Galey about using a scanner...He mentioned, 'Have you contacted the Semaphore?' [the research cluster that oversees Studio307] and I said I wasn't sure who exactly to contact there. So, he was gonna introduce me to them. But then he came back to me and told me to come here. So, I came.

Despite Studio307's well-meaning website indicating that we had a 3D scanner or our email blasts to students and faculty saying all were welcome, Pauline went first to someone she knew – her professor – and obtained an introduction. Like Pauline, almost every interviewed student (10/12) first came because they were personally invited to the space – we visited their class, a friend encouraged them to come, or a professor pushed them to do it. The only two interviewees who did not, came together, meaning their decision to participate was still dependent on another person. The personal relationship and invitation not only helped students discover and feel comfortable entering Studio307, but also, depending on the level of that relationship, led to increased and deeper participation. Here, Jake (a student participant in Studio307) and Jess (author) discuss Jake's early involvement in Studio307 as a member of the TechFund and as a participant in the community consultation process that helped define and design the new space:

**Jess:** Did you tell me why you first came to Studio 307? You just wanted to get more involved?

**Jake:** Well, you told me about it. I guess I'm not the best person to ask because I knew about 307 before it was 307 and stuff.

**Jess:** Yeah. It was just floating around then.

**Jake:** And I drew like what I thought the space should look like and did those forms and stuff [community consultation process].

So, I've always been pretty keen on it. And, so actually, when I did a tour for incoming students, I brought them in here and raved about it, I was trying to build excitement.

What is interesting here is Jake's affinity for the space because of that early invitation and then the level of his subsequent involvement. This affinity might be rooted in subject interest, but it is also cultivated by Jake's early participation in (1) decisions concerning Studio307's funding and (2) drawing out what he thought the space should look like as part of the community consultation process that drove the design of Studio307. This enthusiasm even results in more invitations when Jake brings in more new students. If Pauline, as someone who only came once to do a specific and low-risk task, is what Lave and Wenger would call a peripheral participant then Jake is a full member, a consequence of that early introduction and "being included in what matters" [17, p. 74]. Both came because of invitations and because access is not always a choice and is often determined by the existing community, these invitations and inclusions mattered. But, the level of those invitations and their subsequent involvement differed. According to Davies, "Individuals do not have open access to communities based solely on their desire to be part of that community and to take part in its practices" [18]. In other words, an open door or a website is often not enough, and an invitation must not only be obtained or granted, it may need to be maintained. In Jake's case, by participating in early decisions, he was included in what matters, and that had a lasting effect on his level of participation. Pauline, however, received an indirect invitation, and perhaps a more personal action such as a follow-up email from a staff member might have encouraged her to stay involved with the space.

### PERSONAL RELATIONSHIPS AS A BARRIER

There was, unfortunately, also confusion about how students could achieve deeper involvement in Studio307 and this is because we relied too heavily on personal relationships. Studio307 was a new space without formalized membership structures and simply opening the space to all students seemed sufficient. Clear requirements for entry had been established (you must be a part of the Faculty of Information at the University of Toronto), along with a variety of entry points (e.g. workshops, open hours, clubs), and outreach (e.g. a website, class visits, tours), but the process for how a person might move past the invitation from peripheral to full membership was not always clear. Levels of membership were not even considered in the original plans for Studio307, but once the space started operating, an ad-hoc tiered membership structure started to develop. For example, 24-hr key fob access was available to students outside of open hours, but, due to an institutional security requirement, it was granted at the discretion of the staff and unadvertised. Students had to be told fob access was an option or ask for it. In this example, Jess speaks with Sonya, a regular participant in the space, about what having fob access meant to her:

**Sonya:** Knowing that I could come in to, like, use the space I felt very comfortable

and I brought my critical making group in here to work on stuff 'cause we had access to the Arduino pieces, right, and that made me feel like I knew what I was, I don't know, that I could bring other people here I guess, [chuckle] to use it.

**Jess:** If you were master of the iSchool [a nickname for our Faculty], would you make fob access available to everyone or on a requested basis?

**Sonya:** Yeah, if I were master of the iSchool I think I'd make a fob access granted on request. And it's, like, known that you can make a request for that, because I actually wasn't sure.

What is notable here is Sonya's remark that it should be known fob access was available (implying that it was not widely known) and her apprehensiveness about whether she could ask about it. Sonya was not the only student who remarked on the vagueness of fob access. In this excerpt, Jude and Jess talk about his experience using the room after-hours for a group project when one of his group members, Tom, had fob access:

**Jude:** Tom comes here a lot, and I guess he knew the room would be free. And, I guess we were trying to find a free space in the... 'cause it was in the project week and I think we stayed here pretty late.

**Jess:** Did you know fob access was possible?

**Jude:** No, I didn't. But that makes sense, 'cause we were struggling to find a space.

This illustrates how unclear the boundaries were for students trying to use the space. Sonya was unsure if she was allowed to ask for fob access to work on her projects and Jude did not even know it was possible. 24-hr access had to be asked for and, because it was not advertised, it was more likely to be offered by staff than requested by students. Students had to be "in the know" to know it was possible, or feel comfortable asking.

As this stratification of involvement and its dependence on personal relationships happened gradually over time, it was harder to see relationships as a barrier to long term interaction with the space. We were too focused on the effectiveness of relationships as a catalyst for involvement. It is only upon reflection now, that it is clear that while personal relationships and face-to-face invitations are a powerful recruitment method, relying on these same tactics to communicate what is essentially a membership structure and hierarchy is not ideal.

If a student staff member provides peer support that extends beyond technical support or safety training [18] then a staff member can literally welcome someone to the space and, as we found, this is crucial for bringing in new students. As one student said during the community consultation process, "just having someone to say 'hello' is so important." But,

perhaps only relying on these personal relationships did us a disservice. In the case of fob access, Studio307 relied too heavily on existing relationships to determine how students deepened their level of involvement. Consequently, Studio307 had tiers of membership that were undefined and mysterious, and subsequently served as a barrier. Some reification or formalization in this case, like a simple sign advertising that fob access is available upon request and all projects are welcome, may change how students approach or use the space.

## CONCLUSION AND RECOMMENDATIONS

Personal relationships to the space and invitations to visit from staff, peers, or faculty played a large role in not only encouraging students to visit Studio307, but also the depth of their subsequent involvement.

However, because the depth of student involvement was so dependent on these personal relationships and we failed to proactively organize unofficial tiers of membership, we ended up with an opaque structure that may have deterred some students. Consequently, there were unofficial tiers of members - those with key fob access and those without, or those who felt comfortable using the room as a personal workspace and those who only came for structured events - and no clear path between the two. Based on these findings, the authors recommend the following ways in which personal invitations can be better utilized to get students engaged with the space on a long-term basis without deterring others:

### D. RECOMMENDATIONS

**1. Personally invite students to the space.** Invitations and deliberate inclusions matter if you are trying to get interested students to enter the space and engage with it in a long-lasting manner. Almost every interviewed student first came to Studio307 because they visited on a Faculty orientation tour, heard an announcement in their class, or were told about it by a friend or professor. Passive invitations like posters or social media were, of course, crucial, but the personal invitation was the most powerful catalyst for involvement.

However, it is also important to be critical of how these personal relationships are cultivated, or they might lead to a homogeneity of ideas within the space. For example, during Studio307's pilot year, the authors reached out to instructors of courses with assigned projects where it was very clear that students could benefit from resources within the space. If the authors had solely relied on building relationships with these students, it could have resulted in students with similar experiences and perspectives dominating the space, resulting in a homogeneity of ideas within it. In order to avoid this, the authors also ensured that the space was introduced to a variety of students during orientation tours so that students who may not otherwise have heard about the space during their classes could still have a personal connection.

**2. If membership is structured, make that structure known.** Studio307's membership structure, where some students had fob access and others did not, was not deliberate or widely understood. It developed on its own out of necessity and was unorganized. The consequence of this was a club-like atmosphere. If invitations and inclusions matter, so

do membership structures. To counteract this, make clear: the requirements for entry, how participants can get more involved once in the space, and the paths for doing so. Clearly detailing the membership structure removes ambiguity regarding the conditions under which the space and its resources are available for use. This can be achieved through simple measures like signs, online documentation, and including this information when introducing students to the space.

In addition to adding clarity around membership structures, it is also worthwhile to consider if a collaborative space such as Studio307 would benefit from multiple tiers of membership. Some considerations might be:

(i) Is it beneficial for some students to have more access to the space than others - for instance, in the case of students that require some of the resources for a longer duration due to academic or personal projects? If yes, then rules around requesting special access need to be clarified and made transparent.

(ii) Would it make sense for the space to incentivize students that spend more time in the space? If yes, it is important to state what the circumstances might be for students to move from one membership tier to another, and what kind of privileges come with that. One example could be that after students have used the space for X hours in a semester, they can be paid to host a workshop or event in the space, thus drawing in more students. Some makerspaces use a model that involves trading students' unpaid labour or time for access. These models can throw up their own barriers though as they privilege students with the resources, like time, to purchase access.

(iii) Does the space even require varying levels of access for students to make the most out of it? For example, in the case of Studio307, what if all Faculty students were given 24-hr key fob access? Or none? Based on usage statistics, it might be possible for students who want to use resources for longer projects to work on them during staffed open hours, whilst other students use other resources for their short-term projects. If usage or needs increase, staff can discuss changes to policies by involving student users in the process. This will ensure transparency and less ambiguous membership structures.

To summarize, this paper addresses the value of the personal invitation to student users of Studio307. Responses of interview participants suggest that building personal relationships to the space via staff, peers, or instructors reduces barriers for students to engage with the space. However, relying too heavily on these recruitment methods can create ambiguity and subsequently serve as its own barrier to entry. Therefore, while personal recruitment is encouraged as an effective tactic for creating an inclusive makerspace, it must also be balanced with more formalized structures and entry points.

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