Identity Construction in Model Rocketry: How Newcomers Learn and Construct Identity in AIAA's Rocket League at UCF

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Introduction

The transition from college to the workplace may prove to be a difficult task for graduating students. Forming the right relationships is crucial if a newcomer wants to be accepted by their colleagues. Otherwise, newcomers may conflict with coworkers or be shunned by the workplace community, reducing their opportunities to further succeed in that community. In previous research (Blåka and Filstad; Brown and Duguid; Filliettaz; Gherardi et al.; Holmes; Mak et al.; Moring; Nicolini and Meznar), where studies were conducted primarily in the workplace, researchers have suggested that a newcomer must learn to engage in conversations with experienced coworkers upon arrival to be accepted into the workplace environment. For a newcomer to fully adapt to their line of work, they must learn the language and norms of the company, aligning themselves in a way that the local community can accept.

Workplace learning is in itself a difficult task for students who have never been exposed to workplace culture before. However, students are given the opportunity during school to learn how to operate within a *community of practice*, or any (informal) group that is defined by its members and its practices (Gherardi et al. 277), by having the option of joining an academic club. Many academic clubs attempt to mimic the work and culture that might exist in an actual workplace. As more and more students join these clubs, they ultimately form their own unique community shaped by past experiences and social interactions within the club. Therefore, these clubs provide the opportunity for students to learn how to enter a local community and become accustomed to its practice and its members. There seems to be little or no research, however, on identity construction within these clubs and how well they actually prepare students for a career in the workplace.

In my research, I studied one such club, the American Institute for Aeronautics and Astronautics (AIAA), by joining one of their projects, Rocket League. In this project, members form teams and compete in a model rocketry competition at the end of the semester. In this paper, I attempt to find out how newcomers construct identity in AIAA's Rocket League through the use of language, communication, and group collaboration. If identity construction seems to resemble the findings presented in previous studies, then it may hint at a possible benefit found within academic clubs: the strengthening of students' soft skills to make them more adaptable to the workplace community and open to social cues when they make the transition to the workforce.

Workplace and Organizational Learning

An abundance of prior research has either briefly, or in some cases entirely, described the definition of workplace and/or organization learning, which is argued to help a newcomer successfully transition into a new workplace (Blåka and Filstad; Brown and Duguid; Filliettaz; Gherardi et al.; Moring; Nicolini and Meznar). Blåka and Filstad, for example, argue that the emerging paradigm best represents the kind of learning in the workplace, with focuses on "holism, judgement, action and context" (60). When using the term holism, Blåka and Filstad describe the many parts of the community and its members as being interdependent on each other. Gherardi et al. agree, claiming that learning is in some way integrated with the activities found in the workplace, and therefore must involve group collaboration (274). Filliettaz continues this notion stating that because learning in the workplace is a group activity, then it must also depend on the interactions and culture between the newcomer and other experienced individuals (488).

In fact, Brown and Duguid argue that at some point, the learner realizes that the information given to them from the corporation is generally ambiguous or lacking. In their research, the corporation does not take into account the local context of the workplace (42), and generally sees the work as an individual activity (46). They go on to show that the work done in the workplace differs from what the corporation envisions, so what the newcomer actually learns depends on the local setting of the community (47). Gherardi et al. agree with this idea, describing learning as a "socially structured activity" (294) and claiming that an individual can fully understand some workplace activity only if the underlying circumstances of the activity are understood (275). Therefore, a newcomer must factor in the norms, traditions, and accepted methods of doing things that exist in the workplace for a better transition into it (Holmes 78). Because of the newcomer's lack of resources from the institution to guide them through their work, the newcomer is forced to instead consult the resources of the community and its members, leading to social interaction and collaboration with colleagues.

Many authors have attacked the problem of defining learning from different perspectives. For example, Blåka and Filstad used a "socio-cultural" approach, Filliettaz looked into the role of guidance and mentoring for teaching newcomers, Holmes examined the effects of interaction with the workplace environment, Mak et al. perceived humor as a tool for learning more about the local culture, and Moring described the effects of information seeking on the development of a newcomer. Nicolini and Meznar, however, attempted to encompass all prior definitions and models of organizational learning, arguing that a broad definition is required to understand only a part of the process (738). It should be noted that they are attempting to define what *organizational* learning is, but it can be argued that much of their findings can be applied to learning for an individual, where the "organization" may refer to the individual's knowledge and methods for their line of work.

Learning from Nicolini and Meznar's perspective is, in short, the difference in the organization between two points in time, or how the organization changes its ways when it gains new knowledge (739). This implies that the organization will change its methods in order to adapt to its environment (734). The rules that undergo change can be simple and repetitious practices, or complex doctrines that may govern an entire organization's work (737). However, Nicolini and Meznar note that the environment should have a moderate level of complexity so that the organization is not overloaded with change (high complexity), or allowed to stick to one way of practice (low complexity), and therefore has the best opportunity to learn (731). This consideration for the environment once again reiterates its importance in altering the procedures that take place in an organization or workplace. An organization having this ability to change its ways repeatedly is coined by Nicolini and Meznar to have a decentralized structure, as opposed to having a centralized structure, or one that retains what has been done before (731), so they suggest that learning tends to have a decentralized structure. If the organization can succeed in continually applying new knowledge, then they achieve another aspect of learning: learning is an ongoing process with no

end goal in mind (738).

Learning, from Nicolini and Meznar's broad perspective, is understood best when viewed as something the environment acts on (739) and as a social activity (740), as other authors would agree on. However, Nicolini and Meznar notice that the learning done in one particular organization is not easily transferable to other organizations, even those of the same profession,

because the learning builds off of the norms and socialization tactics that exist in an organization (734). Brown and Duguid, who have also attempted to unite different concepts to define learning, agree with this idea, highlighting the problem of the gap between workplace and corporation, claiming that news travels fast within a workplace but slowly to the corporation (55).

If the skills gained in one community cannot be transferred to another, then how can students learn to adapt to the workplace if the skills they possess may already conflict with their work? It is possible that Nicolini and Meznar's idea of a decentralized learning structure can be applied to an individual or worker. Nicolini and Meznar state that an integral part of their definition of learning is that sometimes an organization must "unlearn," or let go of previous knowledge (732). Therefore, the individual must be ready to alter or remove their previous knowledge and ways of doing things in turn for the knowledge of the new community. A newcomer having this decentralized structure will find it less difficult to adjust to a new workplace, being able to change how they work and interact to flow with the new community. The most important aspects of a workplace community that a newcomer must learn, and therefore be ready to change when entering a new community, are the community's unique practice, language, and ways of social interaction.

Tools for Learning

It has been established several times that the newcomer will need to depend on their colleagues within the workplace in order to learn more about their line of work. More importantly, this interaction will help them discover how they will fit into the workplace community. Therefore, newcomers must actively use a variety of tools upon entering the workplace if they are to achieve any understanding of the community.

The three main tools, which are generally agreed upon by the literature of workplace and organizational learning, that will aid the newcomer in discovering their role in the community are practice/participation, language/communication, and social interaction/collaboration (Blåka and Filstad; Holmes; Gherardi et al.; Brown and Duguid; Moring; Mak et al.; Filliettaz). It should be noted, however, that these tools should not be considered alone for they all have some connectedness to the other tools. For example, language and social interaction can be said to be intertwined, where knowledge of the language is required for proper social interaction. In fact, Gherardi et al. describe language as a medium for interaction to occur (277).

Learning through practice is undoubtedly one of the best ways to gain hard and soft skills in a given profession, especially when the institution does not realize and acknowledge the complexity of the work (Brown and Duguid 42). Therefore, it becomes imperative that a newcomer learns from experience instead of from guidelines, and usually this experience comes with help from coworkers (Brown and Duguid; Moring; Filliettaz). Brown and Duguid analyzed a previous study of "reps", or repairmen, conducted by J. Orr, and they found that when a rep encountered an error they were not familiar with, they collaborated with other reps or specialists to fix the problem, which, in this case, was a malfunctioning machine. The reps recollected stories of other times when a machine was broken and used that information to assess how to fix the machine.

As a result, the reps were able to fix the machine and gain useful information for reference in the future because of their participation and collaboration (44). This hands-on experience was then spread to other coworkers, as it turns out, in the form of more storytelling so that the community could have a better understanding on how to diagnose and repair in the future (44).

Another example of learning through practice comes from Filliettaz's research on

apprentices in the Swiss VET program. In this case, it became the experienced workers' duty to directly guide the students through the program, and Filliettaz stresses the importance of helping the students gain work experience through observation of their practice by a coworker (488). But what is not apparent is that practice also gives insight into how the particular community functions socially, as both practice and community are "closely intertwined" and usually build off of each other (Gherardi et al. 278).

However, before a newcomer can begin to take part in socialization, it might be argued that the local language should be learned. The language becomes more than just a medium for knowledge transmission, but also an integral element of the community giving insight into the functions of the social world in the workplace (Gherardi et al. 277). In other words, specific details such as word choice or the topics of conversations can show how colleagues communicate while implying what topics are work-appropriate. If the newcomer can pick up on these cues, then they can learn to properly socialize with their coworkers. It is suggested by Mak et al. that the newcomer's knowledge on how to socialize acts as a gauge for experienced members to decide whether to accept or marginalize the newcomer (176). Therefore, it is crucial that the newcomer learns appropriate behavior in order to gain the necessary information to function in the workplace (Moring par. 13).

It may seem backwards that the newcomer must know how to socialize in order to learn about the social structure of the workplace, especially if there exists a unique culture that guides social interaction. However, Nicolini and Meznar mention that learning can refer to the process of learning *or* the result of it (740), so learning to socialize in the workplace can be seen as a blend of both for the newcomer. This cultural information that the newcomer eventually gains will then begin to shape their identity, defining their role in the community and how they will fit in with the rest of their colleagues.

Identity Construction and Community Reproduction

The tools for learning in the community (participation, language, and social interaction) are also what the newcomers must learn in that community to build up a harmonious identity. Understanding the connections between these tools will allow a newcomer to better understand the workplace culture, and in turn know how to connect the context to the activities they take part in (Gherardi et al. 276). This knowledge will lead the newcomer to decide how to align themselves within the community (Nicolini and Meznar 735) in order to gain acceptance into it. Any individual that does not use these tools or simply refuses to act according to established norms and cultural practices risks marginalization from the community. It is not easy, however, for a newcomer to immediately negotiate an identity within the community because the learning that happens in the community will always conflict with past knowledge or experience (Gherardi et al. 276). In addition, a tendency to perform according to what is outlined by the institution can further isolate a newcomer from the community (Brown and Duguid 50).

It is at this moment of conflict where a newcomer can either learn to adapt to the culture and flow gently with the community or find themselves fighting against it. Depending on the newcomer's choice, the final result is either acceptance in, or marginalization from, the workplace community. This is ultimately determined by the newcomer's colleagues through socialization with the newcomer (Mak et al. 176). Mak et al. suggest that colleagues in the workplace will engage with the newcomer to see if the newcomer is aligned or in the process of aligning themselves with the ways of the community. Mak et al. go on to claim that if those colleagues experience what they interpret as resistance by the newcomer to established norms, then they are less likely to associate with the newcomer during work. If the newcomer succeeds in building an identity that reflects the values of the community, then the newcomer becomes a full member of the community (Blåka and Filstad 60). Gherardi et al. continue by suggesting that more opportunities and tasks will then become available to the newcomer, each displaying increased proficiency and competency by the

newcomer (281).

Furthermore, the community succeeds in promoting itself by having reproduced its work, language, and culture through the newcomer (Gherardi et al. 276). In fact, Brown and Duguid suggest that the reproduction of the community can encourage its members to become more innovative in the workplace. For any community, it seems that the success of identity construction will lead to the preservation of values, traditions, and other aspects of workplace culture and the growth of the practicing organization. It seems that the relationship between the newcomer and community is comparable to biological mutualism, where if the newcomer constructs an appropriate identity, then the newcomer benefits by becoming an accepted member and having more opportunity to grow and succeed while the community benefits by proliferating itself.

Learning Outside of the Industry

Blåka and Filstad suggest from their findings that how a newcomer becomes acquainted with the workplace is independent of what profession the newcomer holds (72). Although there is plenty of research on a variety of workplaces that reiterate this notion, there seems to be little to no research on whether that may apply to a community of practice outside of the industry—in other words, a community that is not some form of workplace. Many academic clubs, for example, have some set goal(s) that its members want to achieve, and because clubs are generally open to new members the social atmosphere is constantly changing. With members continuously returning or being recruited to clubs, a dynamic network of social relationships exists within a given club, typically with experienced members teaching or mentoring the newcomers.

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Therefore, there exists an opportunity to observe if practice, language, and social interaction are existing tools within academic clubs that allow a newcomer to create an identity that is aligned with the community. Any findings from this sort of research might help to see if experiences in certain clubs on a university campus would help in preparing students for the transition to industry, and ultimately allow them to succeed in constructing a proper identity.

This research examines one particular club, the American Institute for Aeronautics and Astronautics (AIAA) located at the University of Central Florida, to see if newcomers to this club must similarly recognize social cues and act accordingly to obtain an insider status to the club. AIAA has multiple projects available for members to join and compete in. Rocket League, a project where teams build model rockets for competition, will be the focus of this paper. Questions that will attempt to be answered include the following:

- How do newcomers learn through participation in Rocket League?
- How do members communicate in the project? What is being communicated?
- How do newcomers and experienced members collaborate and negotiate the work within their teams?
- Does the project prepare members for the transition to the workforce?

Methods

AIAA is a club at UCF, and their purpose is to prepare students for their future engineering careers—hence their slogan, “turning students into engineers.” This club hosts a variety of projects for members to take part in, including building quadcopters, hovercrafts, and model rockets. Rocket

League, in particular, is a project lasting about eleven weeks within a semester where members form teams and compete against each other by building the best rocket according to the PLs (project leads). My team consisted of three members, including myself. The final competition occurred near the end of the semester.

During the research, I sought to figure out the procedures a newcomer needs to follow in order to properly transition into AIAA's Rocket League. PowerPoints containing introductory material and the rulebook for Rocket League were collected during the beginning of the project. Emails, Facebook posts, direct messages between myself and the members and PLs, and field notes of my own experience as a newcomer were collected over the eleven-week period. An interview with a PL occurred during the middle of the project, while an interview with one of my team members occurred about two weeks before the end of the project. The PL at the time was generally in charge of communication in Rocket League and mentioned that they were holding a job. When interviewing the PL, I asked for their advice on how newcomers should act when joining the club or project based on what they have observed in the past. The team member had participated in Rocket League at least once before but was still fairly new to the project. I asked the member to share their own experiences and how they felt new members should act when working on a team project within the club. In addition, I also asked each interviewee for their thoughts on whether or not Rocket League prepared members for a future career in engineering.

When analyzing digital communication, the responsiveness of the PLs over the course of the project was observed. The length and completeness of each PowerPoint and the rulebook were also recorded. Facebook activity over the duration of the project was also recorded, making note of each "post" and how much attention each received from members and PLs. In analyzing the field notes, particular events and the reactions of the members of Rocket League to them were highlighted.

Each interview was coded two different times: the first coding examined times when the interviewee mentioned aspects they valued or acknowledged in members of the project, and the second coding looked for what the interviewee thought were skills the club enhanced for students when they join the workforce. More emphasis was placed on how many different ways certain skills could manifest themselves in the club. Therefore, unique quotes from the interviews were categorized based on these skills, and the frequencies of each mentioned skill from each interviewee were compared. It is assumed that a higher frequency of one skill implies that the interviewee regards it as very important or valued in the project.

Results and Discussion

After analyzing all of the collected data from Rocket League, several tools appeared to play a significant role in shaping the identity of the newcomer, the most prevalent being learning, communication or language, and collaboration or interaction. It is important to note that these skills were never truly separated nor observed on their own because these skills are closely tied together and mediate each other within the community, as suggested by Blåka and Filstad.

Learning

Learning may seem to be an inherent skill, but it can be honed as a tool when entering a new community of practice. Knowing what to learn and where to learn it will benefit a newcomer in becoming a member of the community. However, it is not always obvious where that knowledge can be accessed, making this knowledge tacit to the newcomer. In order to access such knowledge, which is usually cultural knowledge, the newcomer must have initiative and actively seek out information from the community. Knowledge about how to perform the work in a community, however, is obtained through practice and participation with other experienced members.

In my own case, I needed to obtain my team members' contact information to let them know I had been placed on their team. I decided to visit a workshop on the campus to find the PLs or

other members of Rocket League; the PLs were for some reason not responsive during the first half of the project via email or Facebook. Eventually, I was able to find another member and use them as a means of communicating with the PLs while learning about the reason for the PLs unresponsiveness. My actions during this time can be considered to be an example of Moring's definition of active information seeking, or directly asking questions to others (par. 20). If I had resorted to continuing to send emails or Facebook posts for answers, it is likely that I would have missed out on major aspects of the project.

In fact, many members did not pursue the PLs as much as I did, and eventually were disqualified from the competition or dropped out of the project altogether. This reiterates Moring's idea that sometimes active information seeking is needed for a member to learn what they must do. It is possible that the members that did drop out were instead using passive information seeking, which can be useful in some situations, but also has the risk of misinterpreting a situation (Moring par. 20). In this case, the members might have misinterpreted the PLs' unresponsiveness as a sign that there was no work to be done, or that the project had become inactive for the semester.

Most of the technical learning in Rocket League occurred through direct participation in the project. In fact, limiting the learning process to reading documentation hindered any significant learning in Rocket League. Although the PLs provided PowerPoints for use during the project, the PowerPoints were at times vague, ambiguous, or missing information completely. The member expressed this during the interview, saying that the PowerPoints did not allow them to visualize the product. The rulebook was lengthy and confusing as well, often needing clarification from a PL. This reflects Brown and Duguid's idea that the information provided by an institution will not help a newcomer completely learn the work in a community.

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Learning in Rocket League occurred instead through participation in the project, whether it was designing the rocket or cutting and assembling the components. Any time our team was confused after reading what was given to us, we made sure to consult a PL or another member to clear up the issue and learn how to deal with it in the future. The PL that was interviewed reiterated this, showing how continually asking others for help leads to significant learning in Rocket League. This shows that participation is not only doing specific tasks within the project, but also communicating and collaborating with other members, all of which enhance learning about the project and the community. The notion that practice fosters learning reinforces the ideas of several authors of workplace learning, including authors such as Blåka and Filstad (60), Gherardi et al. (276), Brown and Duguid (43), and Mak et al. (165). Furthermore, the acts of communicating and collaborating helped teach the members what worked in maintaining the cohesion between team members.

Communication

Communication within Rocket League was integral in keeping the community (and team) closely tied together. Therefore, it was imperative that a newcomer learned how to communicate, either with their team or with the PLs, to stay in touch with what was going on and be able to function on the same page as everyone else. In fact, communication allowed for further individual learning, the spread of new knowledge among team members, further discussion of the progress of the project, and trust among team members.

Rocket League is a hands-off project, meaning that the PLs have little to no influence on what goes on within each team. The responsibility of staying in contact with each other, as well as finding out more information, is then placed in the hands of each team. Therefore, anytime our team

had questions or problems, we communicated with other members or the PLs of Rocket League for answers—an example of how Filliettaz believes newcomers will learn (488-489). These answers were then immediately communicated to all other members through digital communication or face-to-face discussions, which also reflects Brown and Duguid's observations of the use of story-telling in the workplace (44). After we became updated with the new knowledge, we used this knowledge to decide what needed to be done next and who would be able to do the tasks. By using communication as a medium for learning, all members in the team became knowledgeable of each component of the project and were able to contribute more relevant decisions or ideas to the project.

Furthermore, communication in Rocket League was a way for members to bond as a team. In my interview with the member, they expressed concern with trusting the members within a group project, especially those that were not participating enough. However, they suggested that by using communication to express concerns with the team's output, they could motivate other team members into collaborating with their team. They went on to claim that confronting a member about group expectations would encourage that member to participate more in the project, given that the member was lacking in participation. This concern aligns with Brown and Duguid's research, showing that members must learn what behavior is accepted in a community to become a part of the community (48). In this case, my team member had expectations for each of the other members, and failure to meet them could have resulted in distrust among the team. Although our team did not have to motivate a member into collaboration, it shows that the member values communication as a way to build trust, encourage participation, and be inclusive within the team, ultimately promoting group collaboration.

Collaboration

Given the complexity and responsibility of the project, Rocket League required sufficient collaboration in order for each team to have a chance at competing. The project consisted of multiple parts, each having equal importance to the performance of the rocket, so it was necessary to divvy up the work among each team member. Which team member would complete each task, however, required further discussion. In the case of Rocket League, having the ability to collaborate with other members solidified a member's presence within the community, and good collaboration required the ability to properly negotiate the work among each member, as well as having trust in each team member to do their part in the project.

In the interview, the member stated that having sufficient collaboration within a group project ensures "you're not doing everything by yourself or alone." The member realized that if they do not effectively sort out the work to be done, then there could be an imbalance in the work, where one or a few members would be performing most of the work. An imbalance does not guarantee total participation from all members, potentially shunning members from the community that are not doing the work. In order to obtain a well-aligned identity to the community, members must be willing to participate (Blåka and Filstad 60) and interact socially with their peers (Holmes 78). These actions taken together can be seen as group collaboration, but if a member neglects one of these aspects, it is likely that they will not receive acceptance from their peers.

As already mentioned, the member expressed concern for trusting other team members, most notably in terms of their work ethic. They suggested that a member lacking in work ethic should not be trusted with project tasks. It seems that in Rocket League, collaboration depends significantly on the trust built among team members. Having sufficient trust in team members can lead to more tasks being distributed equally among members, leading to a better output from the group overall. In fact, it could be that once members display their work ethic (such as the amount of participation in the project), how the work is distributed among members is then determined. If there is a low work ethic among some team members, it could account for any imbalance in the assignment of tasks as discussed before. However, in my team's case, there were no members that

lacked in work ethic, so the distribution of work could not be analyzed according to relative participation. There did appear to be an uneven distribution of work according to each member's relative experience in the club.

Sometimes, the trust from the team to a *newcomer* is not fully received. Gherardi et al. found in their research that a newcomer will usually be assigned tasks that do not have a huge impact on the project (284). This happened to be the case in Rocket League. Seeing that I was a newcomer to the club, my team decided it was best to task me with smaller, less important tasks, such as drawing areas to cut or making simple cuts for the rocket. Even though my team members recognized I had a good work ethic for the project, other, more complicated and important tasks such as drafting designs of the rocket were left in the hands of the more experienced team members. Having a newcomer take on difficult tasks they were not familiar with would have slowed progress in the project. Gherardi et al. suggest that eventually, as the newcomer continues to participate in the community, they will be tasked with more difficult issues, showing the transformation from a newcomer to a trusted member of the community.

Preparation for the Workforce

Rocket League offered a unique challenge to any newcomer to the club, or even a freshman to college. The project granted members more freedom as to how they wanted to go about completing the project, but this freedom came with responsibility. As soon as the member learned to become responsible—learning to search for the necessary knowledge for the project and to communicate and collaborate with other members as a team—they became more likely to adapt to a future workplace community, according to prior research (Blåka and Filstad; Brown and Duguid; Filliettaz; Gherardi et al.; Holmes; Mak et al.; Moring; Nicolini and Meznar).

During the interview, the member was very focused on learning hard skills in Rocket League. The member explained, "[Rocket League] gives me experience with programs I might use in the future, like OpenRocket and SolidWorks. So, hopefully I can take that experience that I'm getting right now and apply it to … my future career." Having these hard skills are important for the member in satisfying entry-level requirements to applying to a job. Rocket League seems to at least introduce members to these skills by having members learn through practice, which is a widely accepted method of learning in the workplace (Blåka and Filstad 60; Gherardi et al. 276; Brown and Duguid 43; Mak et al. 165).

The learning of the newcomer was not limited to model rocketry, however. Joining this particular club can give the newcomer more information about what to expect in their future career. When asked for their reason for joining AIAA, the member replied that they wanted to "explore" their major, which was aerospace engineering. AIAA hosts a variety of engineering projects, but it also grants members the opportunity to network with those in the industry and to learn more about what it takes to be an engineer. For the freshman who is unaware of what their major holds, a club that is geared towards supporting students with similar majors could be seen as a place where all the answers to their questions lie. The newcomer can only learn more about their future careers by having initiative (Moring par. 15), seeking out knowledgeable people (Moring par. 19), and asking them the questions they have in mind (Moring par. 20). If the newcomer can learn to do this now, they will undoubtedly be prepared to ask questions to future colleagues.

Members in Rocket League also have the chance to learn and practice soft skills, such as communication and collaboration. During the interview, the member was very aware of the importance of good communication. When given a hypothetical scenario, the member proposed a method of using group communication to establish standards or expectations for each member. In their view, using communication to explicitly show their concerns for the project would motivate other members to collaborate as a team, even if it means confronting a colleague. The PL also expressed significant value in having good communication skills in a team project during the interview, if not more often compared to the member. In response to a similar hypothetical

scenario, the PL suggested their own method to boosting group collaboration, though much subtler than the member's method:

> If you're just trying to send files over, [use] Google Drive, or [OneDrive], or email if you wanted to. But if you [have to] get something done by noon and it's 11:50 AM, I wouldn't try email, especially if it's a Saturday. [Another thing you need to] learn is how to communicate properly. If someone's blowing up my phone. . . I'm not going to respond to [them]. If you want something from someone, start with "hey," because if they respond, then you got them sucked [in], they know that you know that [they are available to talk]. . . if you start with "hey do you have this?" then I'm probably going to pretend I didn't see it. . . Forethought is a very good word [to describe that].

The PL demonstrates more skill and thoughtfulness when using language, both in Rocket League and in their career. In this case, the PL's use of language allowed them to persuade their peers to continue working on their own project. Therefore, an understanding of the language may lead the PL to constructing an identity that reproduces the work and culture of their community (Gherardi et al. 276). This knowledge from the more experienced PL may imply that newcomers are not as experienced or skilled in the art of effective communication, simply because they do not understand the potential it holds and do not have enough professional experience with it.

Once members participate more in team projects—or perhaps in more academic clubs or communities—it is likely they will realize that having the ability to communicate ideas and convey urgency, without raising tensions with other group members, will be more beneficial to themselves and their work.

Although both the member and PL value the benefits of and practice efficient collaboration, the PL appeared to be much more concerned with using collaboration in order to become more competitive. At one point, the PL explained the dilemma they faced when collaborating with other colleagues:

> We'll catch-22 because you'll think to yourself, "Man, this is my competition in two years, and once we graduate, we're all fighting each other." We do that now; it's not about who gets the best grade, but who's above the average… you know, you're in competition with everyone, you [have to] understand that, that's kind of the unfortunate thing about this, but we do want students to learn and achieve.

The PL understands that although the club is for fun and members are encouraged to accomplish great things in the project(s), the members that sit beside them will be applying for the job they want. This comprehension will encourage the PL to achieve more while still in school to be "above the average." Furthermore, the PL claims that collaboration with other more knowledgeable colleagues can ultimately lead to enhanced learning, which "gives you the greatest ability to succeed." On the other hand, the member thinks very differently from this, stating that Rocket League is "just for fun."

This realization by the PL makes them a more prepared candidate for a successful career. Although even in the workplace there exists collaboration, if a worker wants to become more successful—such as receiving a promotion or leading a project for the company—they are likely to compete with their fellow colleagues. Gherardi et al. suggest that a larger responsibility within the workplace signifies an increased social status in the community and a potentially more successful career compared to newcomers (281). Therefore, if the PL can prove themselves to be a responsible and skilled worker compared to their coworkers, then the PL is bound to receive a promotion wherever they work and gain increased benefits because of their new status.

It is interesting that Rocket League, or perhaps AIAA, does not seem to be very explicit in giving attention to the competitiveness of applying for a job in engineering. It could be that this information is just another piece of knowledge that members will have to work toward in order to

learn about it. Or perhaps, Rocket League's and AIAA's intent is for its members to enjoy working with others in engineering projects and worry less about their future competition. However, Rocket League and several other of AIAA's projects are competition-based, so members participating in these projects are already getting a taste of the competition they will have to deal with. Although the projects may seem like fun for now, newcomers such as myself may feel pressured by the talents of their peers. This pressure may motivate them into going the extra length to make for themselves an identity that not only grants a higher social status within Rocket League and AIAA, but can also prepare them to effectively compete with others when applying for future jobs and promotions.

Conclusion

In Rocket League, members will learn important social skills such as how to seek out knowledge, communicate, and collaborate within this particular community. All of these skills will eventually construct a newcomer's own identity within the community, hopefully becoming accepted by the integrated members of the project and club, thereby making a newcomer into an insider of the community. To ensure acceptance into the community, the newcomer should learn to demonstrate competency and proficiency when using these tools. Rocket League appears to expose members to scenarios they are likely to encounter while in the workplace; being assigned a project and a team to work with reflects the basic structure of workplace tasks, including participation in the work, use of the local language, and engagement and social interaction with other members. Members in Rocket League are given that opportunity to practice and hone their skills in working in a community of practice, with the added benefit that it fits their major.

In Rocket League, members will learn important social skills such as how to seek out knowledge, communicate, and collaborate within this particular community. All of these skills will eventually construct a newcomer's own identity within the community.

Although it is likely that these members may never be fully prepared for whatever workplace community they enter, the experience that they gain within projects such as Rocket League will at least show them that changing their usual practices and ignoring previous knowledge will allow them to better take in the knowledge of their workplace and learn how to become accepted into the community.

The findings in this research accurately reflect previous literature in the field of workplace learning. For example, this research showed that many elements of the community, such as the practice, language, and social interactions, are closely intertwined together, which aligns with arguments from Blåka and Filstad, Gherardi et al., Brown and Duguid, Nicolini and Meznar, and Filliettaz. In Rocket League, most of the learning occurred through experience with the project and collaboration with other team members, who also shared their own experience and knowledge. Furthermore, when entering a new community, a newcomer should take time to observe and learn about these elements when creating a harmonious identity within it (Holmes; Moring; Mak et al.). Knowing the specific language and how members communicated in Rocket League helped the newcomer, such as myself, become even more involved within the project while creating an acceptable identity within the community.

However, more research is required to further gauge how members within academic clubs, such as AIAA, construct their identities, and whether or not this experience prepares students for the transition to the workforce, or to any organization for that matter. It has been reiterated that a

problem with students entering their careers is that they struggle to become accepted by the community, regardless of their technical skills or expertise. Focusing future research on these academic clubs might help to predict how well students will transition to the workplace after being an active member of a club. More research in workplace learning might also lead to schools and institutions developing programs geared towards better preparing students before they enter any community of practice.

This research was limited in its ability to conduct a case study, a more favorable route for exploring a community and its interactions, due to the short duration of the research.

Furthermore, member turnout for Rocket League in particular was at a low during the spring semester. Therefore, if the purpose of future research is to observe identity construction in academic clubs, then the research should occur during the fall, when freshmen are just arriving to college and joining the clubs their campus provides. If the purpose is instead to observe if membership in an academic club generally makes for more successful students in the industry, then the research should be a case study with two groups, one group where students had minimal or no active membership in a club, and another group of students with previous active membership. Whichever route future research takes, the goal should be for institutions to use whatever data is found to better enhance students' skills not only so that they become experts in their fields, but also learn to become integrated members of their local communities.

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Daniel Dyson

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Appendix A: Transcription of Interview with Project Lead

Daniel: Okay, so first question: Why did you join AIAA?

Project Lead: Um, so at least in the engineering field there is - AIAA is a national organization, it's not just a school organization, uh so there is a national AIAA and then there is a UCF segment, which is us. There are benefits to getting on to both when you get into these kind of clubs, you start connecting with your fellow classmates, people who are in companies, people who are in the industry, people who have jobs and are going to give you jobs. So, a lot of it is just shaking hands, getting to know the people and getting to know the field. It's a resume booster as well - especially since I'm an officer I can throw that on [my resume] as well, stuff I do in Rocket League I can throw on there as well. So there's that region which has something to do with it.

Um… but it also gives me the opportunity to show off my strengths, so the better half of what I do is communicating, believe it or not. So you have the engineers that know what they're saying, but can't say it, and then you have the engineers that don't know what they're saying, but can say it - I'm one of those.

D: Okay, so that's interesting. Basically [AIAA gives] benefits such as networking…?

PL: Yes, that's a big one, networking is a big one… uh… that's probably the biggest one to tell you the truth. Employers will look at you and say "ok, this person has the interest to go and join the club, and to participate, do things, and be active in the club" - that says something, apart from the guy that shows up and does his stuff and goes home. So, if NASA's looking at you and goes "oh, he obviously has an interest and a passion for stuff like that."

D: So, why did you join Rocket League specifically?

PL: So Rocket League is a very good intermediate project, uh, I came in as a junior at UCF… our club and projects are sponsored in a way where you have… very, very easy projects, harder projects, and then they get progressively harder and harder. Rocket League caught my attention because it was competition based… it's also one of our most popular projects. In fact, last semester it dominated, but this semester it's kind of had a drop-off. But the big one is there is a lot of people in it, and it was competition-based, which I liked, um -

D: Are the other [projects] not competition-based?

PL: They are, they're just different. So, uh, [Aviation Design] you don't fly your aircraft. D: Oh, really?

PL: Yeah, you spend so much time doing it, and the competition's like not you flying it, and I'm like "come on, that's like…"

D: That's so weird.

PL: Yeah, but at least with the rockets you can't really fly them the same way, because if you control a rocket, it's called a missile. Uh… so from that aspect, Rocket League was a very good interest for me, a couple of my friends fit into it, and it went well with my schedule, so that was convenient. When it came time for officer elections, I was like "you know, let me see if I can't get my feet wet in this, because I know what I'm kind of doing now," so… that's what kind of lead to it.

D: So, I think you already answered this, but your first impression of Rocket League… it kind of sounded like it was a beginning-kind of project -?

PL: It's not our easiest project, but at the time it was a lot simpler than it is now, because now there is our upper-division levels. Uh… now we've kind of stagnated for everyone to do it multiple times. At the time it was just a… a certain parameter, where you had to design for a certain specification, um… it didn't seem the most intense at the time, but it's definitely not the easiest one we have. Um… but rockets are cool, so you want to see them go boom - well you hope they don't, but if they do, it's still not the worst day -

D: Everyone wants to build a rocket -

PL: Yeah! Who wants to come home and say, "I'm a rocket scientist"? Everyone does. Even your accountant wants to be a rocket scientist. So, I like rockets, I used to [build] model rockets as a kid, as like four or five years old, which I shouldn't probably be doing at four or five, but my parents

were very cool about it, so… um, so it's stuff like that, there's an interest for it. It caught my eye more than [Hovercraft Design] or [Quadcopter Design]. Quads… they wouldn't let you fly, so like that's kind of pointless as well -
D: So you want to actually fly the thing that you're building -?
PL: Yeah! And, I mean I can't fly a rocket, but you know, it's - this is the one I don't have control over anyway, so -
D: I mean, yeah, but at least you're still testing it -
PL: Yeah, if in Quads - I know they let you fly now - but before they wouldn't let you fly. So, you would build this quad[copter], and everyone would build them kind of the same, because you kind of just have to, there's a certain - they give you the parts, they tell you what to do, and your design is pretty much insignificant. It comes down to the pilot. If the pilot's constant, then they're gonna say "oh your competition's" - "your design's more critical," but no - if you go last, then the guy's had twenty times out of it… so the first time. And in that aspect, I'm like "no, it's basically just, this guys wants to fly his own quadcopters around and doesn't want to build them." Which makes sense. So, um… the rockets is the only thing where your design is critical for flight -
D: So it kind of just uses your own creativity -
PL: Correct, and it does give you the most flexibility. So like Aviation Design, you pick an airfoil, you're picking - no. For Rocket League, you can [say], "hey, let's just make it out of this because" -
D: Because why not?
PL: Yeah, so the rockets give you [a] design with a little more [creativity], how about that?
D: [Now], think of a project member for Rocket League that you've seen in the past. What about them made them successful as a collaborator or a team member?
PL: They were very annoying.
D: How so?
PL: So, there was a guy I'm not going to mention, but he was in the program last year, and he would always come to me everyday with questions, and at the time its obviously annoying, but it's really good to see them being able to do that, that he's learning. Now it's a pain … but he's learning about [model rocketry] but it's good for that. Um… but he was involved with two different teams, he also did his Level 1 Certification, he did everything last semester, and he enjoys it. He's back again, he's doing it again and he's getting creative and having fun with it… you can see the transition from where he didn't know anything [to where] now he knows something. It's something you don't get… in your class, per se. So the class can teach you "F=ma" and that's all cool and all, but seeing it actually work in real life is a little bit different, and that's what the club offers in that regard. And, you can watch students have this experience, because a lot of freshmen come in and do something - a lot of them do rockets - and they do learn something. A lot of it is "hey listen, you know there's no due date, but you better get it done, and if you don't, you fail." And they're not going to take that in the real world. So, it does kind of give you a little aspect of "hey, here's what you're doing," and… you know I don't if you've noticed but we're a little more hands-off than a lot of things, and that's a little bit by design. This semester, we kind of want to see who's going to do it if we don't press them to do it, and from that regard… watching the student who takes the time to bother to learn is actually quite a - I'm sure professors will kind of give you the same answer. It makes it worth your time, right?
D: My next question is what is some advice you would give to a new member to Rocket League?
PL: It'd be… to find someone who knows what they're doing, and piggyback off them; the more people who have the answers that you have access and contact with gives you the greatest ability to succeed. You messaged me, and half the time I'm at work or doing something else, or I'm way too drunk to respond, or I'm too drunk to be giving advice on rockets. So, if there's other people who you can contact that you can get the answers from, then you can learn in a more efficient and quick manner. Now, doing it the first time you want to learn something, so again it's finding the right members to do it with, and uh… obviously you can sit down with them and say "hey, who knows

their [stuff] in here?" and there's someone who does, and you can figure that guy out pretty quick, and then you buddy up to him. When I first did Rocket League, and we started pairing up for teams, I went around and asked "hey, what's your GPA?" And if it was higher than mine, I would want them [on my team]. The problem I found out was that I wanted everyone.
D: So, pairing up with these people that really know their stuff helps you learn and to become successful?
PL: Yes. And also, failure is not the worst thing. You learn more from your failures than your successes. If everything goes right, then you really didn't learn. If it goes horribly wrong…, [then you would think], "OK, we learned something today, we didn't just get lucky," and that's the difference. So, with Rocket League, maybe it's ok to get lucky, but at NASA, you don't want to just get lucky, you kind of want to know what you're doing when it happens. You don't want to go back to your boss [and say], "well, we got lucky," because you're probably [going to get] fired if you said that. So that's a few things I would say.
D: I think you already answered this question… but do you feel that Rocket League helps members prepare for the transition to the workplace?
PL: That's what we try to - throughout the club, we have meetings once a week where we sit down [and ask], "ok, how's everything going? What's working? What's not? What do we need?" And a lot of this is to prepare students for a way… We'll catch twenty-two because you'll think to yourself "man, this is my competition in two years. And once we graduate, we're all fighting each other." We do that now, it's not about who gets the best grade, but who's above the average. If you found out all the answers to the exam, you don't share that with nobody, not even your best friend, not because you don't want to cheat, you're perfectly fine with cheating - I'm not fine with cheating. Just because… you know, you're in competition with everyone, you [have to] understand that, that's kind of the unfortunate thing about this, but we do want students to learn and achieve, and I -
D: So, "honestly succeed -"
PL: Yeah, and I kind of think of it from the other perspective: the more work that other people can do in the job-world, the less I get to do. So if I don't have to design the whole rocket by myself and get everything, I can just sit back and let someone else handle most of it, and I'll stand up and give the presentation about it.
D: So, piggyback off of them, basically?
PL: Not piggyback, you're in a team, [didn't] you hear about that? But that's the other thing… in the real world, you're working in teams. So, I work in teams at my job -
D: So the fact that Rocket League is a team project, it's an accurate reflection of what you do in the workplace?
PL: Absolutely, absolutely. Maybe it's not about who knows the most, maybe it's about who wants to do the most. A lot of it is… someone in the group has to be the lead, someone has to be the leader, someone has to be able to do the work. And sometimes - most of the time - the person who's the leader doesn't know how to do the work. Senior Design teaches you the same thing. So, maybe you don't know what the answer is, but you know how to get to the answer - there's a difference in those two… There's a person in the leadership of Rocket League who is very good at work, he can… he's very, very smart, but he's not on top of everything, he's got to be lead to do whatever -
D: He's got to be organized by someone else.
PL: Yes, someone has to make sure he's working, and that's a whole job by itself. A lot of my job is figuring out how to get people to work on stuff.
D: So it's definitely a very collaborative [project]?
PL: Yes, and we intend for it to be. It's not a whole lot of work, per se, but just doing the work itself and us saying "there you go, good luck," and just making sure it all gets built and put together - everyone's busy, schedules are hard to meet up with, but if someone's pressing you to go get it down and is able to go convince you to go do it, then you learn something yourself, even if you didn't go do any of the work. That is something within itself.

D: My last question is very simple: so what are the main forms of communication in Rocket League? So, how do you guys talk to each other? (members, project leads…)
PL: Members communicate a lot through Slack -
D: What is that?
PL: …it's an app like Reddit… where everyone can post to it in these groups {PL shows app and groups in app}, and there's direct messaging as well. It's a way for everyone to be in it without having to get everyone's number, which is kind of nice because I don't want some of them having my number because they would message me all the time, [but] with this I can turn [notifications] off every once in a while -
D: Is it like GroupMe, basically?
PL: Yeah, it's a little bit like GroupMe… I tell members that email is a good way to get in touch with us sometimes… There's the AIAA account, and it's not linked to any of our - it is linked to ours, but we have to go physically log in, and it's whoever's thinking about it at the time. For the past two weeks I haven't had the chance to do it at all. Facebook is a good way to get a hold of me most of the time…how would you think to get in contact with someone in the professional world?
D: Emails.
PL: Emails, phone calls, stuff like that. So it's kind of like that, and it depends on how pressing it is. So, if it's not that pressing, you might send an email. If it's urgent, you would send a Facebook message, because [your phone] goes 'ping' can you [have to] look at it.
D: So you're saying that certain communication methods depend on the situation?
PL: Correct. Let me put it to you like this: it depends on what you're trying to communicate with. If you're just trying to send files over, [use] Google Drive, or One[Drive], or email if you wanted to. But if you [have to] get something done by noon and it's 11:50AM, I wouldn't try email, especially if it's a Saturday. [Another thing you need to] learn is how to communicate properly. If someone's blowing up my phone… I'm not going to respond to [them]. If you want something from someone, start with "hey," don't ask initially because if they respond, then you got them sucked [in], they know that you know that you're looking at it…if you start with "hey do you have this?" then I'm probably going to pretend I didn't see it. If someone asks me "hey, what's up?" and I respond with "not much," and then they ask me for something, then I'm suckered into it.
D: Oh, ok. So you're saying to say, "hello" first -
PL: Yeah, it depends on the situation, or how you want to convey. If you want to get someone to do something, you have to go about in a different manner than if you want something, or if you are trying to give them something versus receiving something. Forethought is a very good word [to describe that].

Appendix B: Transcription of Interview with Member

Daniel: Ok, so the first question I want to ask you is, why did you join AIAA?
Member: I joined AIAA because I just wanted to join a club where I could explore my major more, which is aerospace engineering.
D: Why did you join Rocket League, specifically, including the division you chose?
M: I joined Rocket League because they said it was an easier project for beginners. So, last semester was kind of my first semester in the club, so I wanted to do something easy like Rocket League - and I did Silver League - and I enjoyed doing it, and I did it again this semester because last time was pretty fun.
D: Next question is, what was your first impression of Rocket League, and what made you think that?
M: First, I thought it was kind of hard, but that was just because based off of the examples they showed in class - or not in class, but in the meetings - the in-class examples were more advanced, so what we were doing was a little bit more simpler -
D: What were some of the examples that you saw in the class?
M: Their own home-made rockets that they had. So, they came in with like a five-foot long rocket with seven fins on [it], or something crazy like that. But what we were doing was a little bit simpler, and once we got into the actual designing and building of the rocket, it got easier, so that's how that went.
D: So, it kind of seemed a little intimidating at first, but once you got into it -?
M: Yeah, once we got the hang of things, just like actual designing and building it with my own hands - looking at an example and not actually doing anything with the example is kind of hard for me to put in my head of how to actually do things, but once I get into doing it, things get a lot simpler for me, so…
D: So, you feel like actually doing the thing is better than - M: Watching someone else do it, yeah.
D: During the first few weeks of Rocket League, they had those PowerPoints where they kind of showed you the introductory material to how to use the software or how to construct your rocket. Do you feel that those helped you at all in competing in the competition?
M: I think they did help, but for me it was kind of hard because I have a MacBook, so none of the files that they showed me I could use at all. So, I kind of had to look off of my friend's laptop the whole time. But, they explained everything step-by-step so it made things a lot easier.
D: Do you feel that maybe it helped your friend to use the software?
M: Yeah, I mean he was already familiar with SolidWorks, but OpenRocket… the program itself is complicated once you first look at it. Once they explain what to do with the body tube and the nose cone and how to make the fins and all of that, it became easier to read all the different functions on the computer… yeah it wasn't too bad.
D: So, what are some of your biggest concerns with collaborating in a team?
M: With any group project, it's always - if you don't know the people in your group, it's kind of hard to trust people with certain tasks, because you don't know that person, you don't know their work ethics, you don't know if they're going to understand the material, or if they're really going to be in the project itself, and that's with any group project. I feel like this semester is good because I already knew [my friend], and you seem pretty on top of things, so it makes [the project] a lot easier. So it's just hard to trust people in groups.
D: So, basically you just want everyone to be at least participating?
M: Yeah, it makes it easier if everyone participates. But, sometimes it's hard to get everyone's input on everything; they don't communicate, email you back, stuff like that -
D: So [you want members to] stay in contact -?
M: Right, staying in contact helps a lot… but it's just hard to trust people for any group project. D: Right, because you never know who you're going to get, or who's going to drop out mid-way? M:

Yeah, but this project is pretty good.
D: Now, I want you to think of a team member that you've seen in the past, maybe someone who was not participating, not communicating, or being difficult -
M: Yeah, I can think of a few -
D: So, how did you or your team members respond to that?
M: Uh, well a few team members in the past - they wouldn't communicate, they wouldn't participate, they wouldn't actually contribute anything to the actual project. So the only way to force them to actually do something was to keep telling them to do it, texting them constantly, making sure they actually show up to team meetings. Once you put them on the spot, it's kind of hard for them to say anything back. So for example, if one teammate doesn't show up to a lot of meetings, or if he doesn't participate, you [have to] force him to face the consequences of what he is doing, and eventually he'll turn around and he will have to do what he has to do for the project… but usually, it doesn't get to that.
D: Do you feel that it's better to have everyone involved in trying to get this one person to get on top of it, as opposed to just you -?
M: It's a lot easier because once he sees that everyone is kind of like - he's bringing the whole team down and it's not just one person [that's upset] - it's a lot easier for him to see the consequences of him not doing his work. So usually they'll want to pick things back up and start helping a lot more. Usually I don't blame that person, because they have their own personal stuff going on, and it's understandable.
D: But when it gets to be too much -?
M: Once it starts affecting my grade and all of that, they kind of have to start [participating more] at some point.
D: I mean, this project is for a club, so you don't have to worry about grades.
M: That's why it's a lot easier, because if someone doesn't show up, it's kind of just like, "whatever," because it's not just for a grade or anything, it's just for fun. But if it was for a grade or anything like that, it would be more difficult.
D: So what if Rocket League was actually just an actual project for a company you were working with, and someone was still acting like that -
M: Then that's going to affect the whole team and how the whole team looks. If we're working under a manager, it's not just him, it's the whole team that's going to look bad, because it's a team effort.
They're not going to really care if one person's not working. D: They just want the thing done.
M: Yeah, they just want the final product, the final project done. So, if that's the case, we kind of have to kick him into gear.
D: My last question is… do you feel that this project, Rocket League, helps you to prepare for a career in the future?
M: Yeah, I think it definitely does, because Rocket League is designing rockets basically, it fits with my major, and I want to go [work] somewhere similar to that, at NASA or SpaceX, or something like that. So, this gives me experience with programs I might use in the future, like OpenRocket and SolidWorks. So, hopefully I can take that experience that I'm getting right now and apply it to the future… my future career and all of that.
D: So, basically hone your technical skills?
M: Yeah, working with the programs, working in teams, designing a rocket, making it actually work and all of that. You also have to design something for the payload as well, so that kind of gets you thinking a little bit. So, actually designing and building a payload bay, and to keep it intact during flight -
D: Now, you did mention working in teams also gives you that experience, so -
M: If you're in the workplace in the future, you're going to be forced to work with people in a team setting, so doing that right now kind of gives you the experience of how to work better with a group

so you're not doing everything by yourself or alone, so that gives you a little more experience in that aspect, too.
D: Just one last question to add on: so, how do you and other team members tend to communicate in the past?
M: Initially, we contact each other through email, and after that we'll set up a group chat through texts, and we'll see everyone's schedule and try to meet up at a certain place like the Innovation Lab. From there, we'll set up weekly meetings and we'll see each other face-to-face.