Experiencing Disruptive Behavior in a Team Using "Moles"

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Abstract— **The ability to work on a team is a paramount skill for every engineer. The capability to understand, identify and work through team problems will significantly enhance the engineer's ability to deliver a high quality product on time and within budget. Far too often, however, the experience of working as a team, with its challenges, is overlooked in the student's education. The Department of Software Engineering at Rochester Institute of Technology introduced an activity in their Freshman Seminar course to help students work in a team-based environment. The specific focus was interacting with problematic team members. This team activity involved student "moles" covertly being inserted to act in a disruptive fashion. At the end of the activity, the teams reassembled to discuss the task the team had been assigned to do. The instructor revealed the role of the "moles" at this point, and the teams discussed the effect their behaviors had on team effectiveness and the strategies used to deal with the disruptive behaviors. The students have praised the activity, finding it to be different, exciting and educational. This paper describes the "mole" activity, our observations of the results, and provides suggestions for future use in coursework.**

Keywords—Teamwork, software engineering, group activity, group project, team dynamics

I. INTRODUCTION

Rochester Institute of Technology has offered an undergraduate degree in software engineering for over 15 years. All first year Software Engineering students are required to take a Software Engineering freshman seminar course [1] during their first term. The learning outcomes for the course are to instill in our first year students a sense of engineering practice and professionalism, along with the distinctive perspective of software engineering.

During each session of the course, students are exposed to different software engineering principles. Some of which include requirements gathering, software testing, general problem solving, software development processes and working as a team. The "mole" activity is conducted during this team activity. To achieve its learning outcomes, our course couches all the activities in the context of software engineering, but many of the exercises, and particularly this "moles" activity, have broad applicability for other disciplines.

Today's software applications are often very large and complex, and must be created by teams of software developers [2]. Proper and meaningful collaboration among the team members is of paramount importance for ensuring the success of the project. Even though working as a team is an important skill to have, many engineering students graduate without sufficient preparation to function as part of a team and are unable to cope with many of the inherent challenges of teamwork [3-5].

In order to address these issues, we created the "mole" activity as part of our freshman seminar course. The goal of this exercise is to have students experience many of the challenges of working on a team, and specifically in this case, dealing with problematic team members.

II. ACTIVITY OVERVIEW

The "mole" activity was first introduced in the Fall of 2011 and has seen very positive results and outstanding student feedback. There are exercises in the course where the students experience aspects of teamwork, including team-based coding and presentation activities. The "moles" activity was created to broaden the exposure to team activity, and to have the students directly deal with problems a team may face, such as troublesome team members. These are issues which were reported by many students in subsequent courses and in the workplace during their co-ops.

The purpose of this exercise is to allow students to gain experience identifying several positive and negative team dynamics and to understand how to remain the most productive when encountering these situations. An additional goal is to help students identify when they themselves are unknowingly falling into one of the described detrimental roles.

III. ROLES

There are identified roles each mole may play. These may change over time and instructors are encouraged to modify these roles or add others as they see fit. Many of these roles closely align with problematic areas that have been identified in previous research [6].

The Absentee: The goal of this role is to mimic a team member who is missing or otherwise not in contact with the team for large periods of time. The student is instructed to excuse themselves without providing any reason for leaving, and stay away for a significant portion of the activity. When physically present, the students are asked to contribute to the team and act like they normally would. Students have carried

out this role by simply walking out of the meeting location for a few minutes randomly during the activity. In subsequent school related work, students have expressed problems with team members showing up late for team meetings, having to leave early, or just missing a significant number of meetings. This is a common occurrence in a university setting where students have a wide variety of other activities and classes that also demand their attention [7]. Similarly, in the workplace team members may be unwilling or unable to attend many team meetings because they are overcommitted to several projects.

The Disagreer: The purpose of this individual is to actively impede the progress of their team by arbitrarily disagreeing with decisions that their group makes. One option is for this team member to disagree with every third decision that their team makes, no matter what it is. This may be something as minor as the type of font selected for a presentation or disagreeing on a key decision for the assignment. This is a role which students will often encounter, for both productive and detrimental reasons. Many times, teammates will disagree regarding a topic, which may lead to constructive outcomes. The ensuing conversation and subsequent possible evolution is something which is a key advantage to the team environment. However, sometimes these disagreements can sidetrack a team and lead to unnecessary problems [8-10]. A key lesson for students is how to react to these individuals in the future. Will they react to them in a constructive manner or will they respond destructively? Will the team try to work through the disagreements to form a consensus, or merely try to ignore the person?

The Disruptor: The mission of this role is to disrupt or sidetrack their team in any way necessary. This may be done by showing irrelevant YouTube videos to their team, creating side conversations wherever possible, or frankly doing whatever they can in order to get their team off topic. This role mimics a situation that students will inevitably encounter in both the classroom and the workplace [6, 8, 9]. Based on conversations with students, one of the biggest pitfalls that is detrimental to their productivity is being side tracked during team meetings.

The Know-It-All: This role is slightly related to The Disagreer role discussed earlier. The student in this role will purport to being an expert in every aspect of the team's work. The know-it-all's ideas are always better than all the other team members' ideas and should be adopted by the team. This team member often will speak the loudest and shout down others. It is common for the other team members to disconnect from the team work and let the know-it-all do everything, especially if work already completed by others is redone the way that the know-it-all thinks is best. To have productive meetings where each team member has an equal voice, a team needs to find ways to not let the know-it-all dominate all team decisions, such as, voting on a choice when a consensus it not reached, and having all team members agree to abide by the results of the vote.

The Non-Contributor: This role is instructed to not play any part in their team's activity. This person's main focus is to not directly affect their team's progress in any way. They should neither assist nor impede their team. If they are explicitly asked by their teammates to contribute in some way, they should shrug off this request. The purpose of this role is to mimic a team member who contributes nothing to their project. Unfortunately, the reality, in both academia and industry, is that some team members do not contribute to projects. This is for a variety of reasons, including "senioritis" or simply a lack of overall motivation to work on the project [11]. In this activity, students have performed this role by merely putting their heads down and sitting quietly for the duration of the team meeting, or to work on homework for another course. Students will often complain about being penalized if there is a non-contributor on the team. On the one hand, it is the instructor's task to identify when this has happened, and make appropriate adjustments to the grading using peer evaluations [12] or another mechanism. This is also an opportunity for students to learn to deal with a non-performing team member, who despite what students believe, are not immediately fired, and often live long lives in the industrial setting being a challenge for each team on which they work.

IV. ACTIVITY DESCRIPTION

The first step in the activity is to break the class into groups of roughly 5 students. This will create teams that are large enough to only be partially affected by the "moles", but small enough so that they will be adequately felt. Additionally, this is often close to the size of the team that most students will subsequently work on in their future careers in both industry and academia [13, 14]. Once the teams are formed, students are told they will be given approximately 40 minutes to work on a small presentation. The exact activity does not matter, and instructors can select an exercise that links to the goals of the class. The activity should be relatively easy and allow for a high level of interactions amongst the team members. In our case, the stated goal of the exercise was to prepare a presentation on the challenges of communicating with a customer during requirements gathering.

Immediately before the teams are released, one person from each group is asked to speak privately with the instructor for a few moments under the guise that there was some minor problem with a homework submission or another trivial issue. These individuals are to become the "moles". In the private conversation with the instructor, the true roles for the selected students are revealed to them. Each of these "mole" students is assigned a different role and may even assist in the assignment process. For example, a student with a fancy new smartphone would be a good candidate to be a disruptor because they could lead their team off topic by showing them the features of this new and interesting device. It is important that the students have a reasonable level of input in the assignment of their roles because each student will be more likely to do a good job acting out the role if he or she is more confident and comfortable with the one assigned.

After the roles have been assigned, the students join their teams for the activity in the most discreet way possible. It is important that each team have their own, relatively secluded area to work on the faux activity. This is so they will not be disturbed by any other groups. In the past, teams have been alerted that something was awry when they not only witnessed

their own teammates acting abnormally, but when other groups had team members also acting in an atypical fashion. For the purposes of the post-activity discussion, the instructor needs to observe each team and how they react to the moles. The instructor should do this in a discrete fashion so as not to tip off the team to the true motives for the activity. In our course, this is not much of a problem because the students are accustomed to the instructor and student course assistants observing team activities which occur in every class session.

Once the allotted activity time has concluded, all the teams come back to the classroom and the moles are revealed along with the roles they were playing. It is important to not force the students to guess the "moles" as they will likely be far too shy to make public accusations. Additionally, this could lead to some awkward situations if any students incorrectly state that a teammate was a mole, when in fact they were not.

V. GOALS OF POST-ACTIVITY DISCUSSION

Students derive a large part of this activity's benefits during the post-activity discussion. This is an exercise which the instructor is expected to moderate, and to point the students in the general areas of what they should be discussing. However, the instructor needs to be careful to allow the students to properly interact during this component and let their thoughts be heard. During this discussion, student involvement and thought needs to be fostered as much as possible. Approximately 15 minutes was allotted for this discussion.

There are several possible areas that may be addressed in the post-activity discussion. The first is how the students reacted to the moles. Students should be asked to identify, consider, and elaborate on how they responded to their problematic teammates. This is something they likely have yet to consider. If the students fail to contemplate their thoughts and actions, they will lose many of the benefits of the overall activity. It is only through understanding their own thoughts and actions that they will be able to recognize their reactions and make the proper behavioral adjustments when they encounter similar situations in the future.

Ultimately, the discussion should revolve around two central topics. The first is how each student should react to teammates when they are acting improperly. Secondly, each student should learn to self-identify when they are becoming one of the detrimental teammates as conveyed by the moles. When working with problematic team members, the first step is to consciously recognize them. Many students stated that during this activity they noticed these problematic members. However, it wasn't until after the activity and the discussion that they consciously thought about these individuals and their behavior, and how the team could achieve a change in behavior, or work around it. In future team activities, students should be alert for problematic behaviors, such as those exhibited by the "moles".

Once these problematic behaviors are identified, students should understand how to deal with them. Many students stated that they recognized these behaviors, but chose to ignore them, or worse, decided to join in with the destructive activities of their problematic teammates. These "moles" represented a harmful type of team member students are likely to encounter.

Each of these roles should be dealt with in different ways when encountered in groups. It is important for students to recognize how to properly identify and appropriately respond to these team members.

The second major discussion topic is how students should learn to self-identify when they are falling into one of these disruptive roles. There is no such thing as perfect team members. We all have areas where we could improve ourselves with regard to working in a team. A goal of this self-identification exercise is to identify our own tendencies toward disruptive behavior, recognize when we are exhibiting one or more of these behaviors, and how we can change the behavior or prevent it from occurring in the first place.

To start this aspect of the discussion, restate the roles that the moles took and have the students quietly think about times when they exhibited one of these behaviors. The students should not be forced to discuss any of these occurrences. Many will be simply too embarrassed to publicly state their shortcomings. Many students would merely not participate in this discussion component, or would be likely to be only partially honest or forthcoming. This component should represent a period of complete open and honest discussion. The environment should be as friendly and positive as possible to foster a good learning environment. Any aspects which make the students feel uneasy or less than totally forthcoming should be avoided.

VI. STUDENT FEEDBACK

The student reaction to the "moles" activity has been generally very good. Most students were very surprised that the moles were planted in their teams, which is a testament to the acting ability of the students. Many even went so far as to apologize to the moles for getting so upset and frustrated with them during the meeting. Students have also stated that the activity was very enjoyable. This is very important because we believe that students ultimately learn better when they are enjoying themselves.

Following are representative samples of written feedback we have received:

> "When we were actually *trying* to work, it was a pain - but it really helped drive the point home. In your SE career, you're going to have that one person on your team who is going to be the bane of your success; they'll show up late, distract the group, do little if *anything*. Instead of complaining about how annoying these people are to work with, we should have enough experience with them to know how to run a successful group *with* them."

> "The mole activity was an extremely fun day in freshman seminar! I thought it was quite a useful activity because it was a demonstration of the sorts of dynamics one can expect to encounter in a group/team environment, which is critical in our field."

During the subsequent discussion, students described how they worked with these moles. Many would simply ignore these problematic team members. This is typically the case when teams are dealing with the "non-contributors." Teams generally find it easier to just ignore and forget these members rather than confront them about their lack of effort and unwillingness to contribute. This is very interesting because one of the main problems that our upper level students complain about is team members who do not contribute their fair share of the workload to group projects.

While not often the case, when students did directly address the mole during the activity about his or her problematic tendency, it was typically done in a destructive rather than a constructive manner. Students would often become angry with the mole, resort to confrontational discussions, and finally ignore the problematic team member. Part of the subsequent discussion should be about the proper way to confront a team member about his or her behavior.

Students note that the disruptor "mole" also had a negative effect on the team by bringing the team off topic and keeping them from being productive. However, more than with the other roles, it had the added effect of turning other students into disruptors themselves. In many cases, the wave of disruption would resemble a virus spreading through the team.

Students also found it interesting that even though they recognized the mole and the actions he or she was taking, they never really thought about classifying it. They never really viewed problematic team members as falling into different classifications. Being able to identify the behavior brings with it the benefit of known solutions that the team can use to attempt to correct the non-productive behavior.

VII. FUTURE WORK AND IMPROVEMENTS

Even with the success of the activity, there is room for improvement. One enhancement would be the identification of more "mole" roles. Despite the variety of roles currently used, there are likely others which have yet to be recognized that may represent additional problematic areas for team collaboration. Future instructors are encouraged to identify and share these new roles as they are discovered. Additionally, if instructors adopt this activity for use in classes other than software engineering, they are encouraged to create moles which may better reflect their specific course area.

Monitoring the student activity is another area that we feel has the potential to be highly effective for gauging team collaboration. Currently, it is very difficult to observe teams and their interactions without creating suspicions among the students. Additionally, when an instructor is present or observing any team activities, students generally act differently. This is a problem that may be difficult to overcome. Without witnessing these interactions, the instructor risks missing key points and interactions among the team which would provide interesting points to highlight during the subsequent discussion. This is not as large a problem for our course because instructor observation of team activities happens regularly.

VIII. CONCLUSION

Experiencing disruptive behavior in a team using "moles" is an interesting and innovative activity for helping students learn how to work as part of a team. Many of the aspects of working on a team are far too often overlooked in the field of engineering education. The primary focus of this work was dealing with problematic team members. While the exercise described here was with students in a software engineering course, there is no reason why it cannot be used as-is, or moderately altered, with courses in other disciplines. The activity went very well and has been met with positive student feedback for being both an enjoyable, but also very educational activity.

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