

## **Group Dynamics: Predicting Member Performance**

**Prof. Alfred A. Scalza, P.E.  
Department of Architecture & Construction Management  
Farmingdale State College**

### **I. Introduction**

This paper sets out to study the effectiveness of groups in studying Engineering, Architecture and Construction Management. The Accreditation Board for Engineering and Technology (ABET) has set “working in a group” as one of its outcomes to be assessed. Students must learn to operate in a group as preparation for that which will be expected of them after graduation. In fact, group exercises are experiential learning under controlled conditions. Skills honed include collaboration, active learning and communication. This paper is expected to analyze and predict how students operate in a group depending on their background and status in family and social groups. We will see how groups develop and how their members think of themselves including group personality.

The group’s properties will be investigated. In particular, we will look at the properties that affect the viability of the group such as roles, norms, status and size of group. Behavior such as social loafing, bullying and cohesiveness will be detailed.

Of course, group decision making, is the essence of a group and will be considered with relation to how groups arrive at consensus and how this is related to the background of the members. I have collected data on the background of the members of groups and how it affects the individual’s working within the group and the group’s overall effectiveness.

Although our students are assigned to be in many types of groups, this paper will address a group who researches and writes a paper together and then is required to communicate their results orally. I’ll comment on my feedback from students on how they feel about groups and whether peer pressure plays a role. Lastly, this paper will draw some conclusions about why ABET requires group work.

### **II. The Group**

A group is two or more individuals, interacting and interdependent, who are working together to achieve a particular objective. The members of the group interact to share information and make decisions and they do not necessarily engage in collective work that

requires joint effort. A typical work group would be our students who research and write a research paper as a group and then present it orally as a team. A team is slightly different than a group. A team is a “work together” group who generate a positive energy through each other individually and through joint coordinated efforts. For the most part, we use the terms “group” and “team” almost interchangeably because most student groups are neither a true group or team. They are usually a cross between the two.

Groups can be formal or informal. Informal groups are alliances that form between individuals to accomplish something. Our student groups are more of the formal variety because they are organizationally structured with a particular designated work assignment. In some ways they are like a task force, sometimes called a task group. That is, they are formally established, organizationally structured, sometimes cross department or discipline lines and have a definitive life. The duration of that definitive life is the component that allows us to think of these work groups as a task force. When the task is accomplished, the group’s mission is complete and the group is disbanded. Our classroom groups are not assigned a leader but during the working period of the group a leader, sometimes referred to as a facilitator, develops naturally. This facilitator may be trained or just a natural leader. He can “assist a group to accomplish its objectives by diagnosing how well the group is functioning as an entity and intervening to alter the group’s operating behavior.”<sup>[1]</sup>

There are other types of groups beside the typical work group. There are command groups in which the participants loosely work together but its real purpose is to give organizational structure to the group. An example would be the hierarchy in any typical academic department where the Chairman has eight or ten professors in his command group. The key phrase being “loosely work together”. Another type of group is the “interest group”. These are people who band together to obtain a particular objective for which they all have an interest. Political organizations are a form of an interest group. Lastly, there is a group called a “friendship group” whose cohesiveness is based on common characteristics. These groups really do not have a specific mission but instead a general characteristic that binds them together. This could be age, ethnicity, interest in sport, music or art, etc. Our students join and belong to numerous formal and informal groups. In the classroom, they may be assigned to a group which will be required to perform a group task. They also voluntarily join groups for other reasons. Some of these reasons are as follows:

- **Security.** As a group member I may feel less like I'm standing alone. A person feels stronger, has fewer self doubts, and feels more resistant to outside threats. Hence, the gang personality. Gangs have secret handshakes, gang jackets, blood oaths, even illegal behavior to bind you to the group.
- **Status.** If a group is viewed as having some status or place of importance, its members inherit that status. A member of MENSA, an international organization for people of very high IQs, is just as smart and has the same astronomical IQ whether a member or not but being a member implies a certain status. The word "international" implies greater importance too.
- **Self-Esteem.** A group member can feel greater self-worth by being a member. In other words, membership itself can convey some feeling of additional self-worth.
- **Affiliation.** Sometimes, group affiliation is reason enough to join. Being a member provides a social need. There are regular meetings with a familiar format which feels comforting. Some church groups are more for affiliation and social interaction than the religious dogma which created the group.
- **Power.** Simply put, "there is power in numbers". A group can achieve that which an individual sometimes cannot. Labor unions are a perfect example of this. Bargaining with the boss may not be possible for the individual but "collective" bargaining is a fact of life.
- **Goal Achievement.** When an individual cannot do the job, a group can. We pool our resources and strengths to accomplish a task. We pool talent, knowledge and managerial skills to complete the task. This is usually a "formal group" and usually the type of group we form with our students to accomplish the work.

### III. Group Development

Groups develop by "proceeding through five distinct stages; forming, storming, norming, performing, and adjourning." [2]

- **Forming.** The group is formed and its members are looking for its structure, leadership and its actual purpose. Quickly, members of the group start to think of themselves as a "group member" and they begin to work together.

- **Storming.** In this stage, the members agree they belong to the group but have questions about the constraints on their individuality and so there is conflict to be resolved. This settles out as hierarchy and leadership are established and the control and direction issues become clear.
- **Norming.** People start to develop relationships within the group and this group's type of cohesiveness becomes clear. Individuality has been replaced by group identity. This stage leads to an agreement of level of expectation and acceptable member behavior.
- **Performing.** This is usually the longest period in the life of the group. The structure of the group is solid and accepted by its members. This is the main stage of group development where the members perform the task for which the group was formed.
- **Adjourning.** In this stage, the group's mission is accomplished and the members turn toward "where do we go from here"? They are preparing to disband. This is the "winding down stage" and the members start to disengage from "group think" back to "individual think".

Our students, when formed into a formal group, seem to follow these stages but slightly modified. Our student groups are, by definition, temporary groups. Their time together is seldom more than a semester and usually much less. For these groups forming happens at the first meeting and since they have a defined short term project, their direction is usually set quickly. Their storming, norming and performing stages seem to happen simultaneously. They usually flounder and squander much of their allotted time before they "get serious" and attack the task at hand. Toward the end of this middle stage, they accelerate and do the majority of their work. "The group's last meeting is characterized by markedly accelerated activities."<sup>[3]</sup> This type of group development is sometimes called the punctuated equilibrium model. It is characterized by a slow start, followed by an accelerated middle and concluded by an even greater accelerated finish. "It is essentially limited to temporary task force groups who are working under a time constrained completion deadline."<sup>[4]</sup>

## VI. Group Properties

The group's properties that affect the viability and effectiveness of the group are roles, norms, status, size and cohesiveness. Also to be considered under group properties are types

of behavior within the group such as social loafing, bullying, focus, characters, feedback and communication.

- **Roles.** Each member of the group plays a role. Sometimes, as clearly as the scribe or the leader. Usually, the members of a group play numerous roles. Someone who is the leader in technical matters is the follower in social matters. Part of the difficulty in a professor evaluating the worth of the individual members of the group is that at any point in time, each member is playing a different role. Role identity is understood by seeing the attitudes and behavior of the member. “For instance, when union stewards were promoted to supervisory positions, their attitudes changed from pro-union to pro-management. When these promotions were rescinded due to economics, the member once again becomes pro-union.”<sup>[5]</sup> Our view on how we are supposed to act is called our “role perception”. We can get this from reality or from some outside stimulus even one that may give us an erroneous perception of our role. “Role expectation” is how others expect us to act in our particular position. Finally, let me say something about role conflict. This is usually when an individual is confronted by two different role expectations. This can happen in two ways. Either the person is expected to behave in two separate ways sometimes even two contradictory ways or the person is expected to behave in a manner that is contradictory to his personal perceptions of his role. I had a student who asked me to talk to his group because they were pressuring him to plagiarize from a previously paper. His perception of his group role did not comply with his perception of his personal role and ethics.
- **Norms.** A norm is an acceptable standard of behavior within the group. In any given circumstance, any member of the group knows what to do or not do based on the accepted norms of the group. They are unofficial and sometimes un-expressed. When a particular situation comes up, a group member knows with reasonable certainty how to act and how his fellow group members will act in that situation. These are, in effect, unspoken controls on member behavior. “Norms differ amongst different groups and within the group at different times.”<sup>[6]</sup> “A work group’s norms are like an individual’s fingerprints, each is unique. Yet there are still some common classes of norms that appear in most groups.”<sup>[7]</sup>

**Performance Norms.** These are specific instructions, They are explicit cues on how hard to work, how to get the job done, level of output, level of tardiness and the like.”<sup>[8]</sup> These norms try to address items other than the individual’s abilities. Member behavior drastically effects group accomplishments.

**Appearance Norms.** These norms are usually about dress codes, loyalty to the group, and what not to say to outsiders. This only applies to students as far as what to say or not to say to the professor.

**Social Arrangement Norms.** These norms regulate social interaction within the group. Who has lunch with whom, after-hours games and who socializes with whom.

**Allocation of Resources Norms.** These norms address assignment of work, particularly difficult work, and sometimes allocation of a resource such as computer time. These items are usually almost unlimited in the academic arena so this norm plays little part with our students.

**Conformity.** All members of a group, whether assigned or volunteered, prefer to conform. In fact, one would not be a member of a group unless he or she chose to conform at least to the completion of the end task. We usually want to be accepted by our group mates and therefore will try to conform within certain boundaries. “There is considerable evidence that groups can place strong pressure on members to change attitudes and behaviors to conform to the group standard.”<sup>[9]</sup> Students are peer pressured to conform.

- **Status.** This is a socially defined position or rank given to a group by others. It does not apply to our student groups since each is randomly assigned and everyone belongs to a group.
- **Size.** Sometimes, we assign group sizes by the resources allocated to the task such as the number of pieces of lab equipment or the number of computers available in a particular classroom. Sometimes we decide on size of group based on the research to be done and the possibility of each member learning from the exercise. Our task is to teach engineering and ABET’s mandate is to teach engineering to students who will have to operate in a group when they graduate. To accomplish this, we often must juggle the group sizes to fit the resources and to accomplish both goals.

- Overall, we would want our groups to be smaller rather than larger but no smaller than four to accomplish the potential learning benefits of working in a group.
- **Cohesion.** “Groups differ in their cohesiveness, that is, the degree to which members are attracted to each other and are motivated to stay in the group.”<sup>[10]</sup> Sometimes our students form a cohesive group quickly and without any outside influence. There are other times when I have noticed very little cohesiveness except the desire to complete the project and get a good grade. Apparently, desire to achieve a high grade or avoid a low one is still a primary motivator.
  - **Focus.** The group must always keep its focus. Its foci must be the group itself and the task to be completed. If a decision is to be made, it must be a group decision. If there is a problem member it is the group’s responsibility to handle that member. “If there is a lack of structure and purpose in the deliberations, impose both in terms of the task. If there are disputes between alternative courses of action, negotiate in terms of the task.”<sup>[11]</sup>

#### V. **The Characters.**

The cast of characters is randomly set. I choose four students from the roster in alphabetical order and then randomly choose topics from a separate list. I do not let the students choose their group in order to eliminate certain variables such as a group of all dorm students, or a group of all females, etc. This usually insures a group of random personality although each group seems to always develop a character called “the mouse” and another called “the loud-mouth”.

**The Mouse:** This person is quiet and doesn’t say much and is usually underutilized because of this. This is a wasted resource. It is the responsibility of each member to contribute and the responsibility of the group to encourage and develop each person in the group by providing positive reinforcement. Feedback and open communication is essential.

**The Social Loafer:** This person is not the mouse. This person has consciously decided to appear as a mouse but instead is just trying to do less work. He will quietly agree with the actions of the others because to disagree means he will have to contribute and he’d rather coast. This

member is simply not contributing his share and may actually be another wasted resource. The group must find a way to engage him and make him an active contributor. This is very difficult for the students and they often decide to just ignore the social loafer and do the work themselves.

**The loud-mouth:** There is always a dominant member of any group. His input and opinions seem to always be a disproportionate share of the discussion. “It is the responsibility of the group to ask whether the loud-mouth might like to summarize briefly, and then ask for other views.”<sup>[12]</sup> If the loud-mouth is not handled appropriately, the resources of the mouse and sometimes many other members are wasted. An individual can be a dynamic leader pushing the group forward and keeping it on schedule without being a loud-mouth. In fact, the loud-mouth is seldom an effective facilitator.

## VI. Group Decision Making

Groups make decisions different than individuals. We generally feel that a group will render a better decision than an individual. Our jury system is based on it. Actually, it's not always true. In a group we have more input from and to more people and so we usually can handle more variables. That's why many decisions in corporate America today and especially in government are made by committees. Groups certainly have more complete information and knowledge. They also start from a broader array of diverse views. Also, groups usually can think of more possible alternatives as solutions. Generally speaking, an alternative selected by a group usually has a better chance of acceptance than one chosen by an individual.

- **Weaknesses.** Groups take longer to decide on a strategy or a direction usually because consensus building takes time. Sometimes, groups are dominated by one person or by a few people. This leads to these few having their way or a resistance to consensus by the others. Either situation makes the process longer. Also, groups have the disadvantage (some think this is an advantage) of ambiguous responsibility. In the corporate world, it's said, the more people who sign off on an idea the further the responsibility is spread.



- **Strengths.** “In terms of accuracy, group decisions are generally more accurate than the decision of the average individual but less accurate than the judgment of the most accurate member.<sup>[13]</sup> Also, although groups usually are slower in speed of completion, they are also much more creative and more easily accepted than individuals.
- **Consensus.** Groups usually reach consensus by meeting face-to-face and interacting. Our student’s first move after being assigned to a group is to set up a meeting. In the classroom, students have been trained to work alone and this collaboration is at first fresh and new but soon becomes cumbersome. Most students eventually say they would rather have done the work themselves.

## **VII. The Experiment and the Data.**

How might I predict how a student may fair in a group? I have been assigning a group project for the past five years and always wondering how to predict the outcome. I started noticing that some students seem to work well in a group and others not. In fact, for some, it’s almost impossible. I wondered why. Finally, I formed a hypothesis to be tested. My hypothesis was that students have been trained by events during early childhood. This training makes them either a good candidate for a group or not. I decided to create a scale of “group-ready-ness” in which I would try to predict how a student would fair in a group based on their answers to a questionnaire about their early childhood.

- Step 1. At the beginning of each semester, I hand out questionnaire #1 which asked students questions about early childhood groups they may have belonged to. For example, I asked if the student was an only child or had siblings. I asked if a person went to day care instead of staying home with a parent. I queried whether he was a joiner of organizations such as Boy Scouts, Soccer Team, Little League, etc. Based on questionnaire #1, I rated my students on a scale of 1 to 10; 10 being the most group-ready--ness. I’ve given this questionnaire to a class of 25 to 30 students for the past four semesters (a total of 110 students). The purpose is to “predict” how well a student will operate in a group, not to compare student learning in groups vs. individually.

- Step 2. I then assigned students to a four person group with an assignment to research and write a 20 page research paper on a Construction Management topic which I assigned. The group members are selected randomly. The research and the paper must be done by all four members and all four will present it orally to the class on the penultimate week of the semester. They have a half of a semester (about 8 weeks) to congeal into a well functioning group. They must be operating as a group by the time they are required to orally present their work and defend it to the class.
- Step 3. I meet with each group every few weeks to see how they are doing. The official purpose of these meetings is to see the progress they are making. The covert purpose is to listen to them discuss how it is working for them as a group. I encourage them to come see me at my office either as a group, or an individual or any sub-group that has something to discuss. They come in droves with a lot to say. They are usually finding group dynamics more difficult than they expected. They complain about members not doing their share, not participating at all, or just sabotaging the overall process with lack of cooperation and enthusiasm.
- Step 4. At the last class of the semester, after their papers have been submitted and the oral presentations are complete, I hand out questionnaire #2 which asks them to tell me of their experience working in a group. I ask questions such as: Would you rather have done all the work yourself? Was it difficult to work together? Rate how the work broke down in percentages done by each.

### **VIII. Some Conclusions.**

1. The background of the group as ascertained in questionnaire #1 turns out to be a good predictor of the students experience in a group. Students who were in Day Care when they were very young seem to be the best at working with others. In fact, their correlation is almost perfect. Persons who are an only child seem to fair the worst. Again, a very high correlation.
2. There was a category of students who did not correlate closely. Students said they were “joiners” and had been in Boy Scouts, Soccer, etc. yet they

were no more apt to be a good group worker than those who did not. The statistics were 50 / 50. The only possible explanation is that they “joined” at the behest of their parents but would not have chosen to “join” on their own.

3. There was a small group (less than 10%) of “carry-overs”. These people answered the questions indicating they would be a good or bad candidate and then turned out to be the opposite. Perhaps, in joining a group in early childhood they had a bad experience. Interestingly enough, this can be seen clearly in their answers to the second questionnaire. Their answers have more passion and are more vehement than the others.
4. How did the students feel about working in a group? They, almost unanimously would have preferred to do the work as an individual. Some even said, they tried to volunteer to just do the whole job themselves because it would be easier. One older student described the experience as “painful”. The reasons they gave were:
  - It takes too much time to accomplish the task in a group because they all work outside of school. They felt just finding time to meet was difficult.
  - The other members are lazy. The number one complaint was that other group members did less work and/or work of less quality.
  - The other members just work differently than they do.
  - and my favorite, the other members insisted on working on the paper throughout the entire semester and I would have done it the night before it was due.
5. Why does ABET require group work? In industry, most people must learn to work in a group so their initial feelings of “pain” must be overcome.
6. The skills learned by doing a group project are social skills not academic skills and are absolutely necessary in industry. Carl Rogers wrote, “The only person who is educated is the one who has learned how to learn and change.”

**Bibliography:**

1. [http://en.wikipedia.org/wiki/group\\_dynamics](http://en.wikipedia.org/wiki/group_dynamics)
2. B.W. Tuckman, Developmental Sequences in Small Groups, Physiological Bulletins, Journal of Interprofessional Care, 1965
3. C.J.G. Gersick, Time and Transition in Work Teams, Academy of Management Journal, 1988
4. A. Seers and S. Woodruff, Temporal Pacing in Task Forces: Group Development or Deadline Pressure, Journal of Management, 1997
5. S. Lieberman, The Effects of Changes in Roles on the Attitudes of Role Occupants, Human Relations Journal, 1956
6. J.R. Hackman, Group Influences on Individuals in Organizations, Handbook of Industrial and Organizational Psychology, Consulting Psychologist Press, Palo Alto, CA, 1992
7. P.S. Goodman, F. Ravlin, and M. Schminke, Understanding Groups in Organization, Greenwich, CT, JAI Press, 1987
8. G. Blau, Influence of Group Lateness vs. Individual Lateness: A Cross Level Examination, The Academy of Management Journal, 1995
9. C.A. Kiesler, and S.B. Kiesler, Conformity, Addison-Wesley, 1969
10. J. Keaton, and J. Springston, Redefining Cohesiveness in Groups, Small Group Research, 1990
11. [http://managementhelp.org/grp\\_skil/theory/theory.htm](http://managementhelp.org/grp_skil/theory/theory.htm)
12. <http://www.ee.ed.ac.uk/~gerard/management/art0.htm>
13. D. Gigone, and R. Hastie, Proper Analysis of the Accuracy of Group Judgments, Psychology Bulletins, 1997