



Northeastern University

## Speaking to Students

*A Literature Review: Conducting Individual Interviews to Establish*

*Accountability in Group Projects*

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### Abstract

In group work, students coasting on the work of other team members can negatively impact team morale and the perception of accountability. To combat this issue, a series of interviews were proposed, with a focus on examining the effects the interviews had on the perception of accountability amongst all students in the class. A literature review was completed to establish a basis for research in the areas of accountability and group assessment.

### Introduction

This is the literature review for an evidence-based practice paper which presents how the implementation of a verbal assessment affected the perception of accountability in a First Year Engineering course at Northeastern University.

Group project-based courses often have a high probability of containing at least one “hitchhiking” student that does not contribute a fair amount of the work, but still receives a passing grade [5]. This term refers to the member in a group who actively manipulates the other group members in

order to minimize work. It is used in a handout given to students at the beginning of the course explaining how best to deal with the issue if it arises.

The course does not currently have an effective method for evaluating differing levels of input by group members in the final project. This is a problem not just because it can mean that certain students may pass the course without having learned all relevant skills, but also because it is in stark contrast to the individual assignment policy and may lead to dependency between students. It might also encourage the hitchhiker to continue their habit of contributing minimally to projects throughout their engineering education.

An individual verbal assessment was implemented to discern which students were contributing their fair share of work. Following this, a survey was conducted to help understand the perception of accountability in the course. We anticipate that the class with interviews will rate the fairness of their grading higher with regard to group accountability, compared to classes without these sessions. Based on that, we conclude that verbal assessment is an effective way to combat the decline in the perception of accountability that hitchhiking students cause, in a First-Year project-based Engineering course.

To demonstrate that this research is both fit for publication and useful in the field, it is important to show that there is both support in the field for the research performed and that the research is unique. This review is focused on showing this to be true in the areas of using qualitative data, working with groups, and examining the effects of alternative assessment techniques.

## Methods

Most of the papers in this literature review are from the American Society of Engineering Education's Journal of Engineering Education. This narrow scope is due to the lack of other sources

on the tight field of research investigated. Sources were found using a combination of Google Scholar, the ASEE's search engine and ERIC (Education Resources Information Center).

Most papers did not provide extensive information on their methods. Stanton's study had a sample size of 67 students [6], and Colbeck's study had a sample size of 65 students, with 50 being male, and 15 being female [2]. Papers did not include information regarding Institutional Review Board usage.

## Qualitative Data

The data on student perceptions of accountability is based on a survey administered to the students. The papers by Besterfield-Sacre and Leydens [1][4] justify this use of qualitative data. Engineering as a field is dominated by quantitative data, and qualitative analysis is often misunderstood due to its lack of use. However, a number of steps can be taken to ensure that the data collected is both useful and valid. The first of these is to use multiple data validation methods, such as external auditing, member checking, peer examination and triangulation [4] to help establish trustworthiness in the data collected. These validation methods are especially important for studies with a small sample size, as is common in educational research. Having more data on the attitudes of students affords a course director more data with which to improve the department and its courses [1].

## Grouping

The body of research on the use of groups in higher education is wide. Every study emphasizes that the design of the course has a large impact on whether the groups will be successful. The paper by Oakley and Felder [5] can be looked at as a reference guide for how to run a successful group-based course in this way. It contains information on how to design a course, with a focus on practical concerns, such as what is the correct action to take in certain edge cases, for example if a student

wants to change groups for scheduling reasons. The general message is that it is important for the instructor of the course to set the students up in an environment that sets them up for success in groups. This includes actions like instructor-picked groups based on students' schedules, having peer reviews, establishing roles in groups, and providing information on how to deal with problematic group members. This information is also mirrored in the work of Stanton [6]. In their paper, they focus on the group formation, an integral part of the group work process. The hitchhiking terminology used in our research is based on the definition given by Oakley and Felder. Giving the students the information provided in the paper is essential to their success, as it places them in the position of responsibility, a common theme throughout all of the papers studied.

Every paper emphasized the importance of group work, and the associated pedagogical benefits. The high value of groups has been an undisputed fact in research since the 1980's, when cooperative learning research was first performed [8], with results that led to its implementation in higher learning facilities across the country. Research such as Colbeck [2] has expanded on this, with detailed analysis on what makes groups work effectively, but there has not been any research on how interviews affect the perception of accountability; therefore, we conclude that our research is both unique in the field and based on existing literature.

## Assessment

The study authored by Hayes [3], although focused on software engineering, contains useful information about assessment of students in group projects. The paper examines multiple schemes of grading individual contributions, one of which is a pop quiz that assesses the contribution of an individual group member. The caveat with this technique is that the interviewer must have an intimate knowledge of the project and its workings in order to correctly identify when a student's answers are inadequate or incorrect. In the current course design of Northeastern's introductory

engineering course, Cornerstone of Engineering, the intimate details of all projects are known to a high degree by course staff, since the course focuses on design decisions and documentation. Therefore, the grading approach we take has a basis in research, but the addition of accountability in our research provides a vital alternate data point for the educational community at large. The ideas from Stanton's research [6], are useful here: they focus on using peer assessments in order to both assess the students and provide a feeling of accountability for the students. This feeling of accountability is key, as if the students feel responsible for their own grades, they are more likely to be able to handle the difficult challenges of leadership that are faced in group based courses.[5] This dual-purpose design of having the peer assessments benefit both the instructors and the students on multiple levels mirrors the design of the planned interview process, meaning that the ideas have a basis in literature.

## Conclusion

It is clear that the idea of using individual interviews to identify "hitchhiking" students is based in the literature of the field, whilst also providing a meaningful addition to the body of research. There is plentiful research to support the use of group work [2][5][6], and a large amount of literature that suggests that interdependent accountability is essential for effective group functionality [5][6]. Similarly, there is a basis for using qualitative interviews as a means of assessing students [3][4][6]. In this way, I feel comfortable with the current state of my research with regard to the current literature on the topics at hand.

## Further Research

After reviewing the sources discussed in this paper, it is clear that there is a huge need for a focus on replication studies. Many of the studies done in this field have a small sample set and are often only based on one or two semesters of data. This potentially allows anomalous data to propagate,

and therefore to define the paths that we take as educators. To ensure that the actions and research we take are based on solid fact, it is imperative that more effort is expended on replicating data and therefore ensuring its validity.

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