Students’ Responses to a Scavenger Hunt for First Year Engineering Orientation

Abstract
Orientation is an essential part of the transition into engineering studies at University. A successful orientation introduces students to their department and to university studies, providing important information and assisting the students in making friends and acclimatising to the university lifestyle.
The university of XXXX has trialled the OrientHunt - a scavenger hunt intended to deliver information to students through the active learning environment of a campus-wide roaming team-based activity. This paper details the outcomes of the first implementation of the OrientHunt. It provides a report of the students’ exit survey responses.
The students believe the scavenger hunt was successful in its objectives of preparing them for transition as well as providing social opportunities for meeting other students; they also felt that a range of communication and teamwork skills had been improved by the experience.

Keywords: Orientation, Freshmen Engineers, Scavenger Hunt

1. Introduction
Orientation is an essential part of a successful transition into engineering studies. A successful orientation introduces students to their department and to university studies, providing important information and assisting the students in making friends and acclimatising to the university lifestyle. Supporting this transition can be expensive in terms of time and resources; more efficient and effective mechanisms for orientation of new engineers are always being sought (1).
One approach to orientation is through the use of a scavenger hunt (2). In a scavenger hunt participants are given a list of items to find within a given time limit. By carefully selecting these items to address the objectives of orientation, it is potentially possible to develop a scavenger hunt that meets the needs of new students, and supports their transition into engineering degree programs.
The University of XXXX has trialled a Scavenger Hunt, known as the OrientHunt, as a method for meeting the objectives of university orientation. This paper presents the students’ responses to the OrientHunt, as elicited through an exit survey completed after the event.

2. The OrientHunt List
The OrientHunt list consisted of 20 items chosen to address five key outcomes of orientation:
1. Provide a supportive transition into tertiary education- the support of a students’ transition into university is vital for establishing the foundations of university study habits and an effective work-study balance.
2. Provide key information- the things that students must know about their new institution
3. Provide a group experience- a group experience allows students to develop much needed engineering skills including teamwork, communication, time management and
4. Prepare students for their first day at university.
5. Assist students in making friends.

Each of these objectives was addressed through a careful selection of items for the scavenger hunt list, with each item mapping to at least one of these goals; the goals themselves were chosen based upon a review of the literature on orientation, and interviews with the Faculty in the Engineering First Year program (3). Sample items included:

- What are the opening and closing hours of the assignments office (in 24hr time)?
- Engineering and Science Student Services can assist with enrolments or changing courses. What building (name/ number) is it located in?
- What colour and animal best describes your team?
- How many types of plagiarism are listed at the top of page 3 of the University of XXXX Plagiarism Policy?
- Write down the minimum personal protection equipment (PPE) required for working in the Engineering Mechanics and Electrical Laboratories.

The items were designed to help students find key information for themselves, so that they would be able to find that information, or related information, in the future when they require it. Based on estimated walking time around campus, the list was designed so that most teams would get most items, but would run out of time before completing the full list.

3. THE ORIENTHUNT IMPLEMENTATION

The Orienthunt was implemented for the 2011 mid-year intake, forming the key afternoon activity for the students. The OrientHunt was jointly coordinated by the Engineering First Year (EFY) department and the Engineering student club, who provided volunteers to assist with the running of the event.

A total of 95 students participated in the scavenger hunt, working in teams of four or five. Teams were given two hours to complete as many items as possible from the list. The volunteers positioned themselves around the campus to assist the students with any inquiries and to assist in team development. These volunteers also took photographs to record the event. Teams were encouraged to interact with the volunteers and each other to find the solutions to the items; at least one of the list items required interactions with another group.

Overall, the event ran smoothly, with most teams completing the whole list in less than the allocated two hours. Observation of the participants suggested two key factors to explain the faster-than-expected completion: transfer students, and smartphones.

An unexpectedly high proportion of the participants in the OrientHunt were internal transfer students from other degrees at the University of XXXX. While there are always students in the mid-year intake who have come from other degrees, the 2011 cohort had a much higher representation than usual. These transfer students have already experienced their first day at the University of XXXXXXX and are familiar with the campus, facilities and computer systems.

Additionally, the faster completion time was due in part to students completing the scavenger hunt with the aid of “Smart” phones. This identified a unforeseen flaw within the scavenger
hunt items as students were able to answer the questions remotely. Questions intended to force the students to move around the campus (such as the names of lecture theatres) could instead be answered by seeking information on the University's website. There is also the potential for this lack of interaction with the university environment to have affected students' responses toward the scavenger hunt overall.

After the completion of the OrientHunt, students were invited to complete a survey to capture their perceptions of the event. This survey consisted of 18 Likert-style items:

1. The Scavenger Hunt was worth the time I spent participating
2. My group did well at the scavenger hunt
3. The Scavenger hunt provided key orientation information
4. I feel better prepared for university
5. I feel I know my peers better
6. I am more confident I will succeed at the University of XXXXX
7. I improved my Team work skills
8. I improved my Communication skills
9. I improved my Time management skills
10. I improved my Problem solving skills
11. I feel the scavenger hunt provided a good group experience
12. I feel I know the campus better
13. I made friends during the scavenger hunt
14. I believe that I can find the information for myself in the future
15. I have a clearer understanding of what is expected of me as a U of XXXXX student
16. I learned things not covered in the EFY Orientation
17. The scavenger hunt reinforced the EFY Orientation
18. I feel more like an engineering student

In addition, there were four open-ended questions:
1. What did you expect to obtain from participating in the scavenger hunt?
2. What was the most valuable thing you learned from the scavenger hunt?
3. What is your biggest concern about your transition to U of XXXX?
4. Any other comments?

Of the 95 students who participated in the Scavenger Hunt, 52 participated in the research by completing the survey.

4. THE PARTICIPANTS’ RESPONSES

The participants’ responses were aggregated to allow for analysis and comparisons. Four approaches were used to analyse the responses:
- Individual question responses
- Crosstabulation between questions
- Aggregated objective measures
- Open-ended question responses

Each of the questions on the survey were worded positively; that is agreement with the question indicates that the scavenger hunt was helpful and achieved its goals.
The full analysis of the responses is too large to include within the scope of this paper; the key results or the four analyses are presented in this section.

4.1 Individual Question Responses

Overall, the participants' responses to the questions were positive, with 50% agreement to almost all of the questions, and less than 20% disagreement to almost all of the questions (Figure 1):

![Figure 1: Distribution of Responses to Likert Questions](image)

It is worth noting that the majority of the "strongly disagree" responses came from two participants–one who strongly disagreed with 11 of the 18 questions, and a second who strongly disagreed with 7 of the 18 questions. Between them they accounted for 18 out of the 22 strongly disagree responses, suggesting that the strongly negative experiences were concentrated in just a few participants.

Figure 1 also suggests that there are questions that share similar distributions of responses, such as question four "I Feel Better Prepared For University" and question six "I Am More Confident I Will Succeed At XXXX University." It is possible that this similarity is just an artifact of the aggregation; however it is also possible that the similarity is due to most participants providing the same answer to both questions. In this case, the two questions are not independent, and can be combined in the analysis; more importantly, it shows factors in the orientation process whose outcomes are linked, and potentially suggests new ways to achieve either or both outcomes.

4.2 Question Cross-tabulation

A substantial number of the 18 questions showed similarities in their response distributions. For some of these question pairs, the similarities were predictable; however there were additional question pairs that were unexpected.

4.2.1. The Skills Questions

Four of the questions dealt with the participants' skills:

Q7: I improved my teamwork skills
Q8: I improved my communication skills
Q9: I improved my time management skills
Q10: I improved my problem solving skills
The distributions of participants’ responses for these questions are shown in Figure 2:

![Figure 2: Skills Questions response distributions](image)

The participants responses to Question 7 and Question 8 are for the most part identical – 85% of all participants gave the same response to both questions, with the remaining participants only responding with a single step difference (Figure 3).

![Figure 3: Difference in response level - Q7 & Q8](image)

Similarly, the responses to Questions 9 and 10 also matched, with 85% of the responses matching, and the remainder also only one step different (Figure 4). It is clear from these responses that the participants perceive that team work and communication are linked, and that time management and problem solving are linked.
The links between the two sets are not as conclusive, however 65% of all participants answered all four skill questions identically, suggesting that the participants are not distinguishing between which skills have been improved.

4.2.2. Preparation and Confidence
The distributions to Questions 4 ‘I Feel Better Prepared For University’ and 6 ‘I Am More Confident I Will Succeed At XXXX University’ also demonstrated very similar distributions (Figure 5).

Figure 5 shows a histogram of the differences between responses, showing that more than half of the responses matched, and that no response differed by more than a single category.
Figure 6 suggests that while the question responses are similar, there is nonetheless sufficient difference to prevent them being declared identical. Preparation and confidence are similar; but they are not the same.

4.2.3. Making friends and finding information

An unexpected similarity in distributions arose between question 13 "I made friends during the scavenger hunt" and question 14 "I believe that I can find information for myself in the future". The distributions are illustrated in Figure 7, and a histogram of the differences between individual responses is shown in Figure 8.
Figure 8 shows that nearly two thirds of the participants answered the two questions the same, with only two respondents differing by more than one step in their answers. This suggests that the respondents view finding information independently to be the same as having friends, two outcomes that were not predicted to correlate. It is speculated that the participants have interpreted “for myself” to mean “without having to ask a lecturer” that by making friends they have now found another way to find information, even if it is asking someone else.

From these distributions it is clear that the participants were strongly positive towards the scavenger hunt overall, and in particular they were strongly supportive of the social aspects such as making friends.

4.3 Overall goal measures

The students’ individual responses were also used to determine whether the five stated objectives of the scavenger hunt had been met. Each individual question was given a weighting of 1, ½ or 0, corresponding to whether that question was strongly, weakly, or not at all linked to each of the objectives. The Likert responses were converted to a 1-5 numerical value, a weighted average was taken from all of the contributing questions, and then converted back to an Agree / Disagree value.

The objectives were grouped into two categories: Assisting in Transition (objectives 1, 2 and 4) (Figure 9), and Supporting Social Interaction (objectives 3 and 5) (Figure 10).
Figure 9 and Figure 10 show that the majority of the respondents felt that the scavenger hunt met its objectives, with only a small minority actually disagreeing. The social objectives in particular were well supported by the students.

What is also emergent from Figure 9 and Figure 10 is that the objectives themselves are not independent, and that the response distributions across the categories of objectives are very similar. This suggests that the Provision of Key Information and Preparation for the First Day are in fact just aspects of Assisting Transition, and that Group Experience and Making Friends are just aspects of the Supporting Social Interaction. By simplifying the number of overall objectives, it is easier to maintain clarity in the implementation of the orientation program in the future.

4.4 Open Ended Responses

The open-ended responses confirmed that the students feel the scavenger hunt supports their transition into the university environment. However in areas like preparation for university and confidence about succeeding the participant responses were not as positive as the other questions. This suggests that improvements can be made in these areas to increase the effectiveness of the scavenger hunt.

A significant minority (19/52, or 37%) of the respondents did not provide an answer to the question "What is your biggest concern about your transition to the University of XXXX?". It was predicted that their lack of concerns would be because they already feel prepared for university, and as such these 19 participants would be over-represented within the disagree proportions of the participant responses.

Cross-comparison of the responses showed that the "no concern" students are over-represented in the neutral responses, rather than in the disagree responses. Had the "no concern" students appeared in the agree responses, this would suggest that it is the OrientHunt that is resolving their concerns, but this is not the case. Neutral responses suggest that they already feel that they are prepared for university, and that the OrientHunt does not undermine this preparation.

Of the students expressing concerns nearly half (16/33) raised concerns that were not explicitly covered in within the orientation program - university / life balance (7/33), university workload (5/33) and some specific pieces of information (4/33). The other responses from these participants showed agreement with the value of the scavenger hunt; this suggests that students feel like they are benefiting from the scavenger hunt but have concerns in areas that are not addressed.

Eight of the participants voluntarily identified themselves as students transferring within the University of XXXX from other degrees; this information was not explicitly sought through the survey instrument. It was anticipated that these eight respondents would have received less benefit from the scavenger hunt, and as such they would be more likely to have given "disagree" answers to the likert-style questions. Analysis of their responses, however, found that they mostly agreed that the scavenger hunt met the orientation objectives; with only a small response in either neutral or disagree. It is also significant to note that the transfer students still agreed that the scavenger hunt prepared them for their first day at university, even though they were already familiar with the campus.
5. CONCLUSION

Overall, OrientHunt proved to be successful, even though the students were able to complete the hunt well within the time allocated. The majority of students agreed that the OrientHunt was useful, with only a small proportion disagreeing to the 18 exit survey questions. All five of the stated objectives of the OrientHunt were met for a majority of the respondents, with particularly strong support for the Supporting Social Interactions objectives.

Emerging from the analysis were patterns in the students’ responses, with strong links between some of the measured outcomes. Preparation for University and Confidence to Succeed were found to be strongly linked, as were Making Friends and Finding Information for Themselves. These links show that the respondents do not distinguish between all of the specific objectives of the OrientHunt, and raise the potential that future implementations can instead focus broadly upon the high-level objectives of Assisting Transition and Supporting Social Interactions.

OrientHunt has proved an effective and innovative way to introduce engineering students to the University of XXXX. Participants felt that it provided key information, introduced them to the campus, and provided a key opportunity to develop social interactions with their future colleagues.

References