

## **AC 2007-1599: ONE-MINUTE ENGINEER, NTH GENERATION: EXPANSION TO A SMALL PRIVATE UNIVERSITY**

### **John-David Yoder, Ohio Northern University**

JOHN-DAVID YODER is an Associate Professor of Mechanical Engineering at ONU. His Doctorate is from the University of Notre Dame. Research interests include education, controls, robotics, and information processing. Prior to teaching, he ran a small consulting and R&D company and served as proposal engineering supervisor for GROB Systems, Inc.

### **Beverly Jaeger, Northeastern University**

Beverly Jaeger, PhD is a member of Northeastern University's Gateway Team, a selected group of full-time faculty expressly devoted to the first-year Engineering Program at Northeastern University. The focus of this team is to provide a consistent, comprehensive, and constructive educational experience in engineering that endorses the student-centered and professionally-oriented mission of Northeastern University. While she concentrates on first-year engineering courses and teaches across all engineering disciplines, she also teaches specialty courses in the Department of Mechanical and Industrial Engineering at NU.

### **John K. Estell, Ohio Northern University**

JOHN K. ESTELL is Chair of the Electrical & Computer Engineering and Computer Science Department, and Professor of Computer Engineering and Computer Science, at Ohio Northern University. He received his doctorate from the University of Illinois at Urbana-Champaign. His areas of research include simplifying the outcomes assessment process, user interface design, and the pedagogical aspects of writing computer games. Dr. Estell is a Senior Member of IEEE, and a member of ACM, ASEE, Tau Beta Pi, Eta Kappa Nu, and Upsilon Pi Epsilon.

# **One-Minute Engineer, N<sup>th</sup> Generation: Expansion to a Small Private University**

## **Abstract**

The concept of having first-year students conduct ‘One Minute Engineer’ (OME) presentations was presented at the 2006 ASEE National Conference<sup>1</sup>. OME presentations, first developed at Northeastern University (NU), consist of having students individually provide a short (nominally one minute) presentation on an engineering-related topic at the beginning of class each day, with each student participating once during the term. Students select the topics in advance on a first-come, first-serve basis, with feedback from the instructor on the chosen topic. Instructors could then relate future lectures and concepts to earlier student presentations.

The 2006 ASEE paper presented results from two instructors at two different universities. The data showed that students reported an increased awareness of engineering topics as a result of the One-Minute Engineer. Since this method showed similar - and promising - outcomes at two different institutions, the authors agreed to implement the OME activity across all sections of the first engineering course at Ohio Northern University (ONU).

Pre- and post- surveys similar to those administered in the original OME implementation were used at this institution. These results were compared to the previously published data as well as with the current class at the originating institution. An additional level of assessment was added to this iteration of the OME through the establishment of a rubric for evaluating the students’ presentation skills. Finally, assessment data on students’ engineering awareness was compared across universities.

## **Background**

The need for today’s engineering students to have improved technical communication skills has been well documented, perhaps most clearly in the ABET criteria<sup>3</sup>. Teaching communication as part of engineering curricula has been tried in many ways, a good overview of which is presented in Ford and Riley<sup>4</sup>. Adding technical communication to the freshman curriculum was one of the central reasons for reforming the courses at ONU. Some of this work has resulted in previous publications<sup>5,6</sup>. The first of these courses, Freshman Engineering 1, includes objectives related to technical communication and exposing students to the engineering profession.

As the model of a Scholar/Teacher was being discussed at the 2006 ASEE National Conference Plenary Session<sup>2</sup>, Dr. Sheri Sheppard stated that the scholarship of teaching and learning is distinguished from just good teaching as it involves communicating it to a community that is engaged in debate and publishing and building on each other’s work. In attendance were two of the instructors from the aforementioned Freshman Engineering 1 course who, later during the conference, also attended a paper presentation regarding the OME. After meeting with the other faculty teaching the course following the conference, it was decided to make the OME a part of this freshman course. While the OME itself would not be sufficient to teach technical communication, it provides a forum for students to practice and display technical presentation

skills. In addition, students often note that there seems to be a lack of connection between coursework and the ‘real world.’ While laboratory experiences can help students with this<sup>7</sup>, it is also helpful to have examples so that the students can relate course content to their own experiences and interests outside of the classroom. Additionally, the ABET criteria requires that students have a knowledge of current events related to the engineering profession<sup>3</sup>. It is also clear that having an understanding of engineering history can help us learn from prior mistakes<sup>8</sup>. The OME presentations provide the instructors with a wealth of examples that can be referred back to during lectures. They further provide students with a wide variety of examples of engineering and its impact on society.

The OME is certainly not the only way in which to achieve the objectives of better technical presentation skills and a greater awareness of engineering in the real world. However, it combines both of these topics in a way that has minimal impact on class time. It also seems particularly helpful for a first-year course, since:

“In addition to conveying engineering content, teaching first-year engineering students entails its own specific educational issues, some of which are: (1) attracting and maintaining the students’ interest and attention at a quality level, (2) helping students generate a sense of relevance between class and engineering in the real world, (3) building a foundation to their technical presentation skills, (4) motivating them to be interested and inspired by engineering as a career, (5) making them feel part of the new academic world they are entering, and (6) allowing them to contribute to and participate in their own education<sup>1</sup>.”

As part of the implementation process, one of the Freshman Engineering 1 faculty members contacted the instructor who had originally developed the OME, who agreed to assist with this process, provide copies of handouts, pursue cooperative research in this area, help with the assessment of the results, and to co-author this paper. This collaboration, which was one of the objectives for presenting OME at ASEE, started a dialog on how to best iterate and customize the existing OME model for programs at other universities. The adjustments, implementation, and outcomes will be discussed below.

### **The OME assignment**

The students were provided with the handout found in Appendix I. While the appendices present the handouts given at one of the universities, they are very similar to those used by the other. There were 150 students at ONU spread across five sections and 57 students at NU in two Engineering Design course sections. Because of variations in class sizes, schedules, etc., there was some variation in how faculty decided to implement the OME presentations. For example, some sections had one presentation per day whereas others had as many as three per day. Some faculty had students volunteer for time slots, but others assigned them. In all sections, every student was required to give a presentation, and all were evaluated using the same rubric (see Appendix II). In addition, students filled out common pre- and post-surveys (see Appendixes III and IV).

Complete details of the basic assignment are presented in the original paper<sup>1</sup>; however, a brief overview is given here. Students selected an engineering-related topic that was from either a product, a current event, a vocabulary, or a biography category. Students were allowed to choose their own topic and category, but were required to contact the instructor ahead of time via email in order to ensure that the topic was relevant, unique, and of a reasonable scope. Topics were selected on a first-come, first-served basis. Presentations were ideally one minute and up to two minutes. Students were allowed to use PowerPoint only for the presentation of visual aids (photos, diagrams, etc.). In general, this was done at the beginning of each class period, though in one section where multiple students presented each day, one presentation was done at the end of the class period.

## **Assessment**

Several forms of assessment were completed in this course. First, students completed pre- and post-surveys on a 5-point Likert scale. Second, the post-survey included several open-ended questions for student reflection. Third, faculty reflection was used. Finally, a rubric was used to evaluate the OME presentations. Each of these will be discussed in this section.

Figure 1 is a graph summarizing the 144 student responses to the pre-survey found in Appendix III, specifically to the questions:

*“I feel aware of engineering issues in history.”*

*“I feel aware of engineering issues in my surroundings.”*

*“I feel aware of the engineering issues in current world events.”*

Figure 2 shows the previously-published data from NU with 57 students responding to the same questions. In order to view a quick comparison, Table 1 shows the average response (based on a 5-point Likert scale with 5 indicating ‘Strongly Agree’) to each of the questions. The table shows that the average response is higher at ONU than at NU, particularly in the category of History.

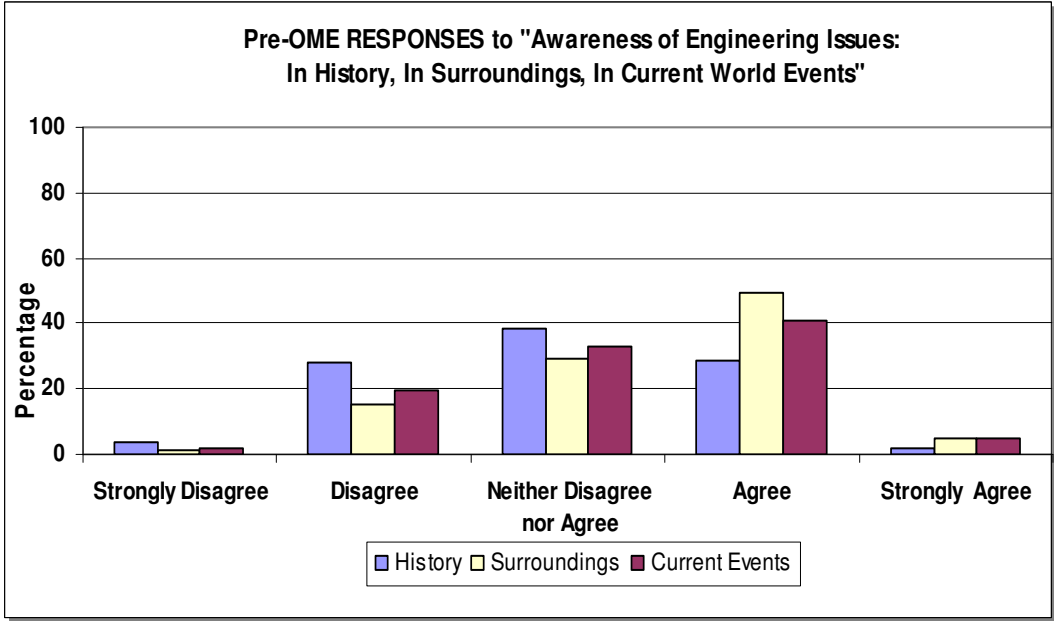


Figure 1: Pre-survey Data from ONU, Awareness.

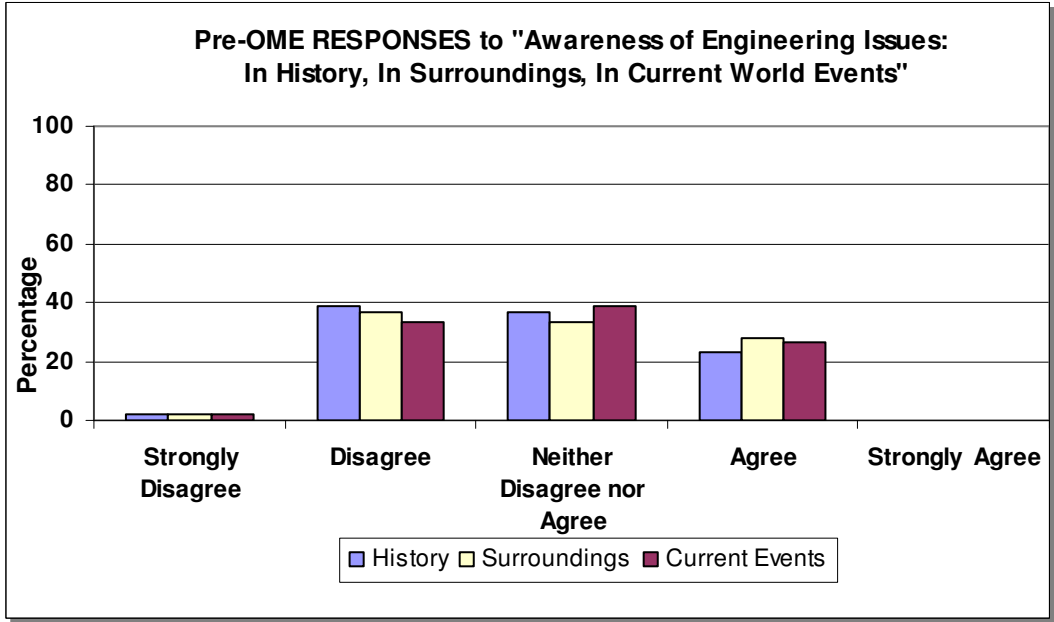


Figure 2: Historical Pre-survey Data from NU, Awareness.

Table 1: Average Numerical Response to Pre-Survey questions

AWARENESS CATEGORIES	AVERAGE RESPONSES	
	ONU	NU
History	2.98	2.81
Surroundings	3.41	2.88
Current Events	3.27	2.89

Student comments from the historical data at NU can be found in the original publication<sup>1</sup>. A few student comments are worth noting from the ONU's pre-survey:

*I know some issues in each of the categories, but I don't know much.*

*I know very little about engineering in general.*

*I feel that I have a decent grasp on what is going on in the engineering world, but not as good a grasp as I should have.*

*My history teacher did a good job of talking about engineering in history, such as the Panama Canal. I don't feel that engineers get enough credit.*

*I tried to do a famous engineer in history for my one minute engineer and couldn't think of one.*

Note that the comments and the graphs depict an appreciable variation in student confidence about their knowledge of engineering topics. It is worth making special note of the fact that a student could not even think of one famous engineer when considering topics when this was assigned.

Figure 3 shows the Post-Survey (Appendix IV) data on the following three questions, with 138 responses.

*"Due to the activities of the One-Minute Engineer presentations, I feel aware of engineering issues in history."*

*"Due to the activities of the One-Minute Engineer presentations, I feel aware of engineering issues in my surroundings."*

*"Due to the activities of the One-Minute Engineer presentations, I feel aware of engineering issues in current world events."*

Note that the wording of the questions is not the same as that in the pre-survey; rather, the questions are specifically focused on whether the students feel there is a change 'due to' the OME. Figure 4 shows the historical data from NU for the same three questions, with 53 students responding. Table 2 shows the average response to each for comparison purposes.

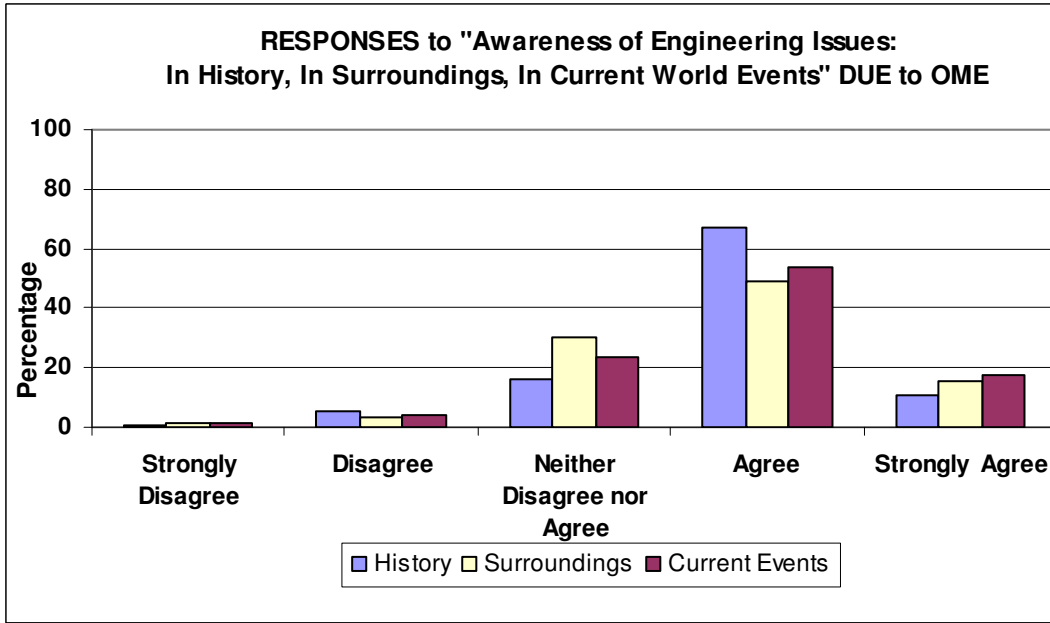


Figure 3: Post-survey Data from ONU, Awareness.

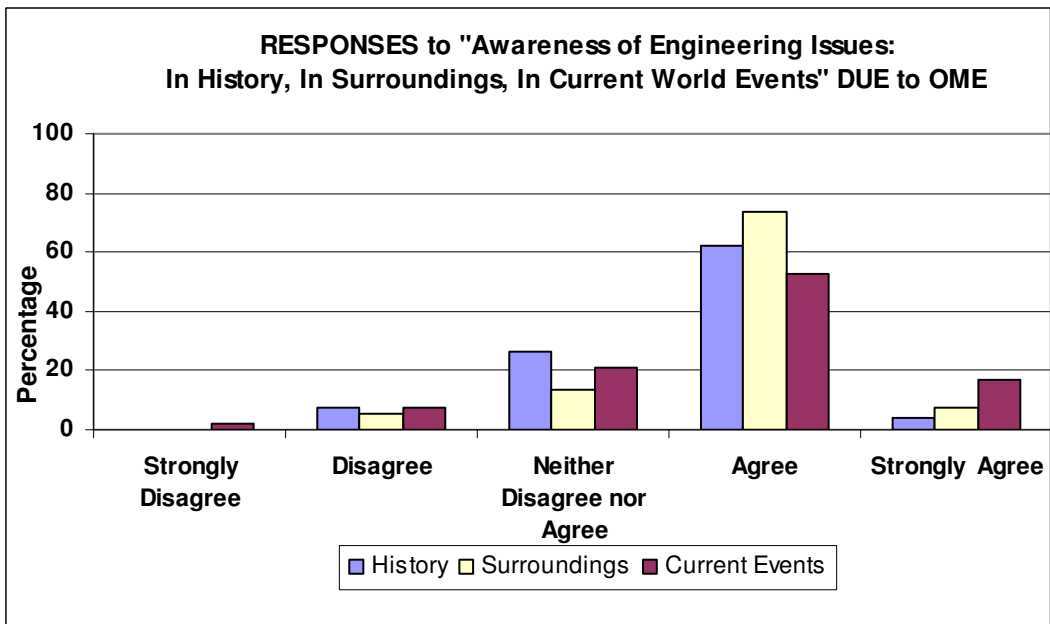


Figure 4: Historical Post-survey Data from NU, Awareness.

Table 2: Average Numerical Response to Post-survey question

AWARENESS CATEGORIES	AVERAGE RESPONSES	
	ONU	NU.
History	3.83	3.62
Surroundings	3.73	3.83
Current Events	3.81	3.75

In this case, the numerical results are very similar between both universities. The median response to all questions at both universities was 'Agree' (4 on a 5-point scale). Student comments on these questions were generally positive, with a few examples below:

*Told me about people that I didn't know were engineers, told me about products I don't associate with engineering.*

*I see now how much engineering affects daily life.*

*I really learned a lot about new engineering and technology innovations.*

It must also be noted that there were some areas of negative comments. Many students commented on the lack of depth in topics, while others noted that in their section, the topics were not distributed evenly. Other students did not see connections between global issues and their lives. Common examples were:

*Only about 2 or 3 students gave presentations having to do with engineering issues in history so I didn't really learn much.*

*Again, people chose issues in foreign countries, not many any relation to me.*

*Not [sic] many local presentations.*

*Very little depth, however a few new concepts.*

The next two questions asked whether the students found the OME presentations interesting and useful. Figure 5 shows these results, which are very positive, with only about five percent of students giving negative responses to either question. Figure 6 shows the same data for NU.

A few representative student comments are included here

*Most caught my attention and I wanted to learn more.*

*I was able to see aspects of many engineering disciplines.*

*The information presented may be extremely useful in the future.*

*I think they are very useful. They make people do research on their own and speak in front of the class.*

There were only a few negative comments in response to these two questions, with the commentary again focusing primarily on the range of topics and the short time allowed.

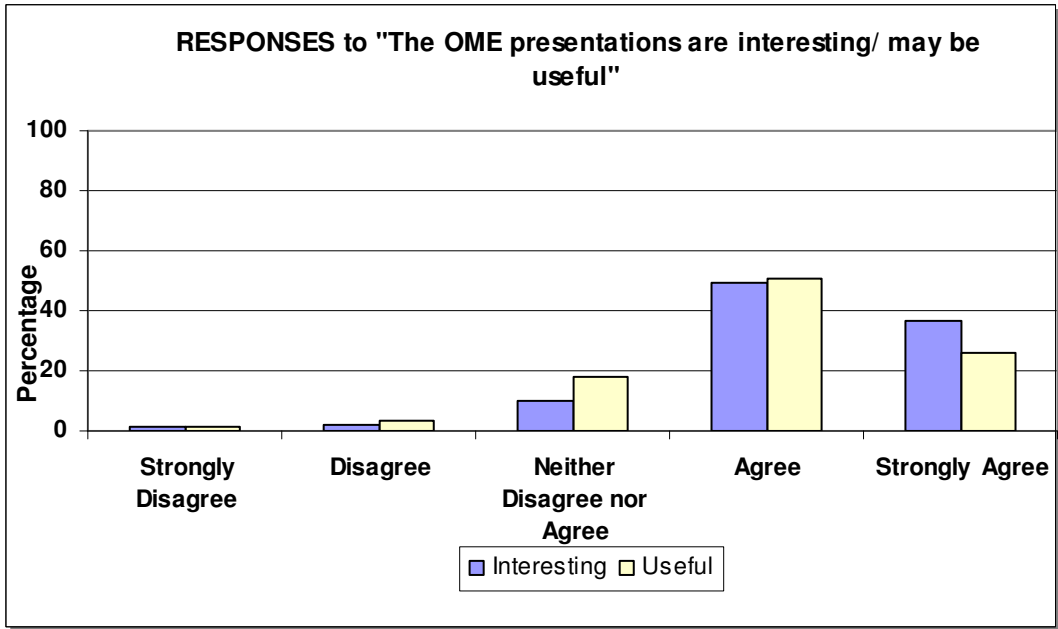


Figure 5: Post-survey responses, ONU, OME interesting/useful

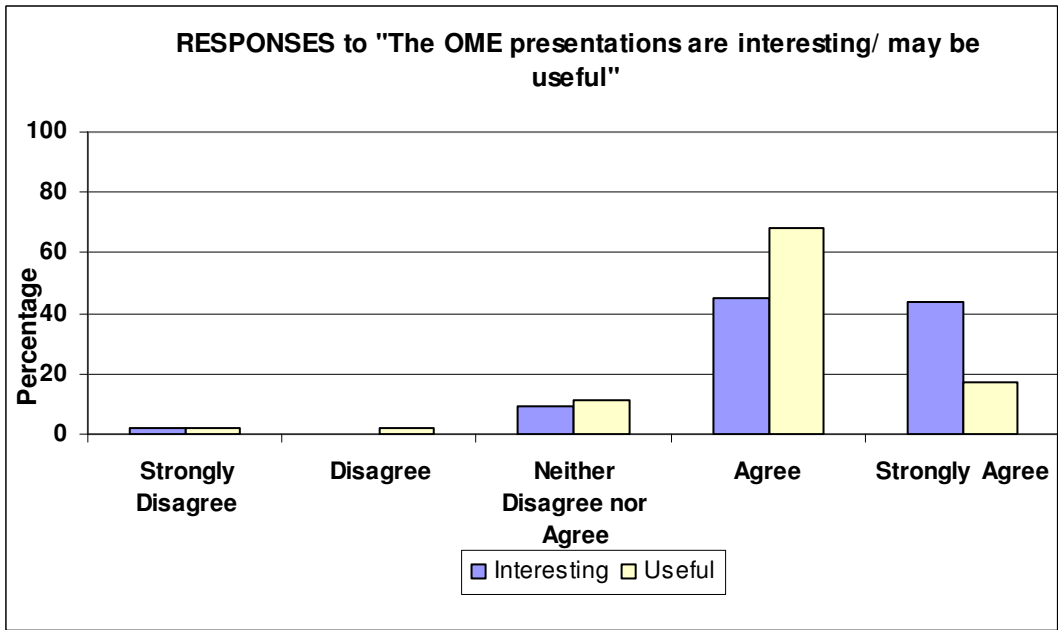


Figure 6: Post-survey responses, NU, OME interesting/useful

Figure 7 summarizes the results of survey questions 6 and 7, which ask what topic they presented and which was their favorite to watch. From this data it is clear that earlier student comments were correct in that some topics were clearly underrepresented. This also seems to be a clear reflection of student interests, as less than three percent of respondents said their favorite topic was either a biography or vocabulary. Figure 8 shows the same data for NU.

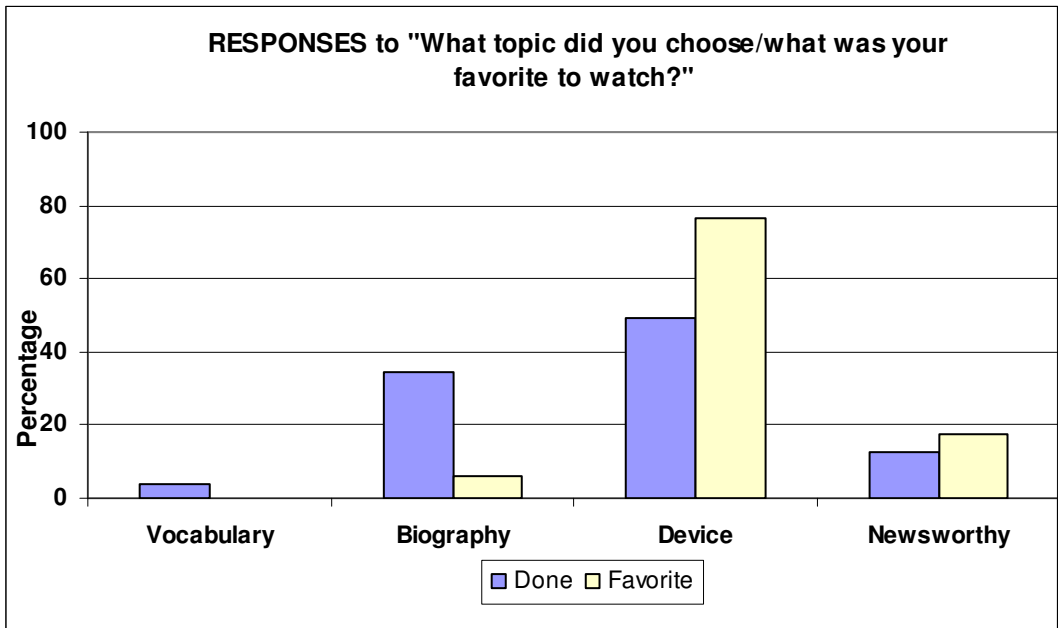


Figure 7: Post-survey responses, ONU, OME topic presented/favorite.

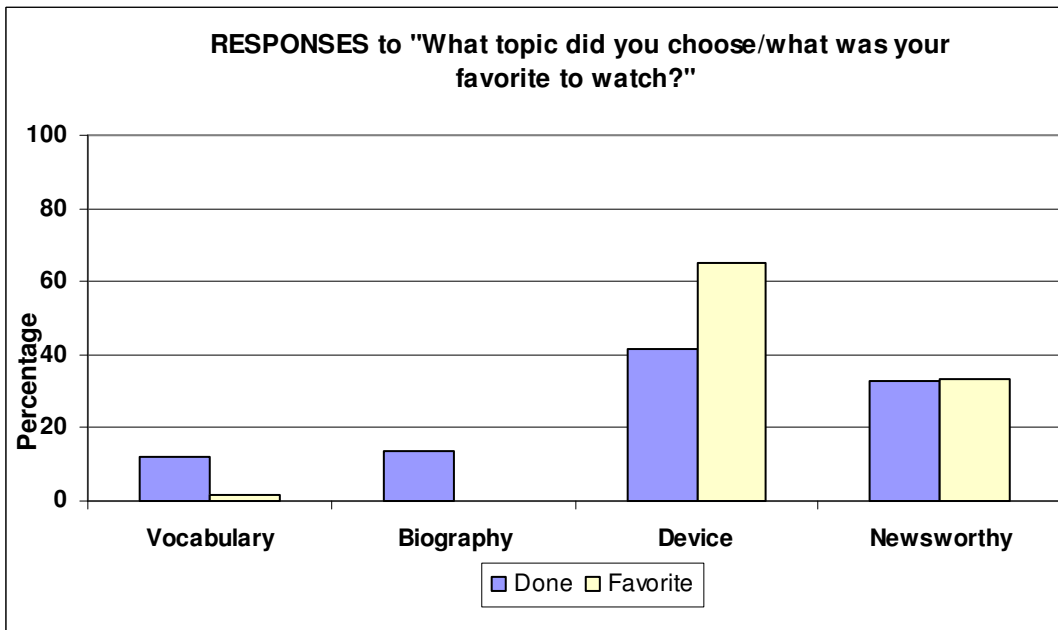


Figure 8: Post-survey responses, NU, OME topic presented/favorite.

Question 8 on the Post-survey asked: “Beyond the educational value of the OME content, what do you think were some of the objectives for having the One-Minute Engineer?” For comparison purposes, these topics were divided into the same categories as published in the original publication<sup>1</sup>. While this process is somewhat subjective, most comments fell nicely into one of the established categories. Note that some student comments clearly fit into more than one category, and therefore were included in more than one of the topics. There are some major differences to note here between the two schools, the most obvious of which is that, in the new

implementation, about two-thirds of students chose improved presentation skills as the objective. This could be because students were later required to do a longer presentation in the same course, or it could be due to the emphasis across much of this course on technical communication. An interesting fact is that the originator of OME reported that its inception initially grew from a push toward enhancing presentation skills and then the emphasis shifted to cast OME as an awareness tool. It is also interesting to note that several topics, including 'Have fun' and 'Learn how things work' received no responses at ONU. It is unclear whether this is an effect of the instructors, how the assignment is presented, or simply a byproduct of the fact that so many students chose the presentation skills category given the new focus in the course on presenting.

A rubric (Appendix V) was used to evaluate the OME presentations at ONU. Very few students (<10%) were rated as Practitioners in all areas. The Volume/Diction and Rate areas were the worst overall for students. A large number of faculty comments related to the areas of students reading to the audience (from the screen or note cards), awkward pauses, or rushing in delivery. Some typical faculty comments are included below:

*You appear to be just reading your notecards*

*You have failed to cite references for your visual aids*

*Need more eye contact with audience rather than screen*

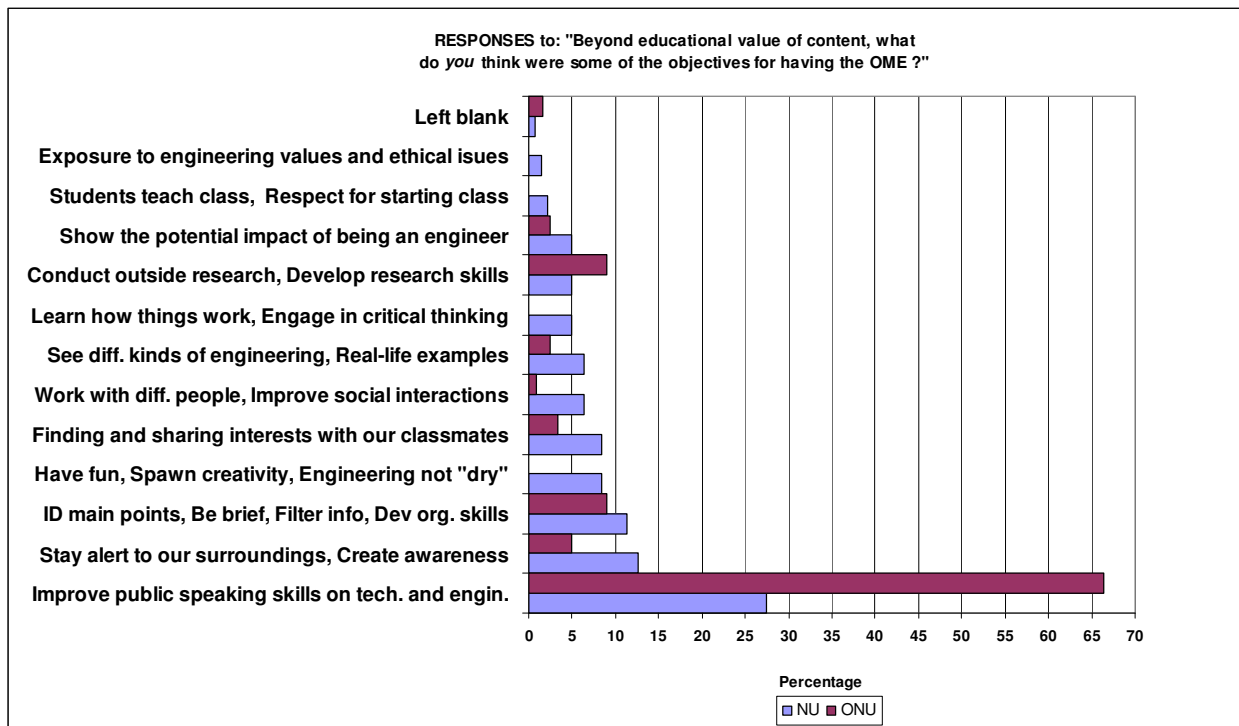
*Be aware of the use of "um" pauses (– or other filler utterances)*

Two of the authors taught the course, and note that all students completed the assignment to a satisfactory –or better– level. The other students seemed interested in the presentations, and were respectful to the speaker. Since the inception of the OME, relatively few students arrived late to class. However, a disappointingly low number of students across the sections took a very creative approach in making their presentations. Presentation skills varied widely among students, and far too many students 'read' from their notes or from the slides. In light of this and the request for faculty to provide more OME examples from all participating universities, we recommend three approaches to catalyze the students' inclination to be creative and engaging:

- (1) Have the instructing faculty provide two or three examples of OMEs, using a variety of physical models and presentation styles;
- (2) State to the students at the outset that creativity and concomitant effectiveness are part of the assessment and their "personal presentation stamp" will be rewarded if regarded as effective and appropriate; and
- (3) In the pre-OME e-mail exchange, ask the students to identify their presentation "stamp" and encourage it with enthusiasm and even make some suggestions to those who are the first to embark on the OME early in the term.

Finally, as training for the outside world, disallow notes. For a one- to two-minute presentation, students should be capable of remembering a few facts and details. Again, emphasize the value

of this practice for them and for their listeners. OME is a great opportunity for multiple lessons in the engineering profession.



**Figure 9: Comparison of student responses to Objectives**

## Conclusions and Future Work

Students and faculty alike have found the OME to be interesting and useful. Data were similar between NU and ONU with a few notable exceptions:

- Pre-survey results at the new University showed a higher self-score awareness.
- Far more students chose presentation skills in response to the Objectives question.
- There were fewer categories of responses to the Objectives question at ONU.

Student responses overall were very positive. Constructive student comments in response to question 9 on the Post-survey, asking how this assignment could be improved, included:

*Could possibly give a sample OME before the class starts them (ex. to work off of) or have teacher analyze the first couple more in depth so we know how to improve.*

*Process presentations "How is it made?"*

*Require some form of visual aid, make sure people stay within time limit.*

Several students echoed the thoughts of the last respondent, asking that the time limit be strictly enforced and that some visual aid be required. The changes would seem to be easily made without any negative impact. The first student comment, asking for a sample, also should be implemented. The professor, or a Junior or Senior student, could make such a presentation early in the course. This seems preferable to analyzing the first student presentations, since this might seem to be unfairly critical of the first few students. It also seems that including an option of a process as a topic makes sense. It should also be noted that many students said they liked the OME as-is.

Negative comments fell into a few consistent categories, *e.g.*:

*Perhaps increase the time to 3 minutes.*

*I think it would be better for the professor to assign topics so the student will learn about something they didn't know too much about originally.*

While adding length to the time would allow for increased detail, it would really change the purpose of the OME. As noted in the original paper<sup>1</sup> there are other situations (even in this same course) where a longer presentation is important, but adding time to this assignment would detract from its purpose. With regard to the second comment, it seems clear from the questions about student interests that assigning projects with an equal amount of each topic could make students less enthusiastic. A positive by-product of the OME was that students were able to get to know a little about one another's interests on the basis of OME selections. We are not inclined to compromise the opportunity to personalize as it tends to make it more interesting in general.

Based on faculty evaluations of the presentations, finding ways for the students to be more engaged in the presentation and avoid reading note cards should be a priority. As noted above, perhaps a restriction against note cards combined with a requirement for a visual aid could accomplish this. An additional way of promoting student engagement would be to have a rotating subset of students assess the quality of the OME presentations by utilizing the same rubric as that used by the instructor. By participating in a peer evaluation, the students will be naturally guided by the rubric's criteria to observe those aspects of oral technical communication that are being emphasized by this activity, thereby opening a different avenue to learning. Additionally, making modifications to the scoring rubric to address such issues as reading from note cards, use of visual aids, and making eye contact with the audience would increase student awareness of these issues, thereby helping to improve their efforts in these areas.

Perhaps the most exciting aspect of this project is that it strongly supports the Teacher/Scholar model discussed at the Plenary Session of the 2006 ASEE Annual Conference<sup>2</sup> works. By attending the conference, the authors were able to see a new idea, work with the author, and attempt to replicate results. The data above indicates that student perceptions of their change in awareness, and students' positive assessment of the OME assignment, were replicated at an additional university with very different demographics. Such work should lead the way to additional schools following this model, and strengthens the network of Teacher/Scholars committed to improving the way they educate engineers.

## References

- [1] Jaeger, Beverly and Sven Bilen, 2006. The One-Minute Engineer: Getting Design Class Out of the Starting Blocks. *Proceedings of the ASEE National Conference*, Chicago, IL, June, 2006.
- [2] ASEE 2006 National Conference plenary video:  
<http://hosted.mediasite.com/hosted4/viewer/Viewers/Viewer240TL.aspx?mode=Default&peid=8af22d74-c09b-42f8-aed4-b82b7623cd6f&pid=dd673857-ff6d-426c-a91a-06132e24765a&playerType=WM7#>
- [3] "Criteria for Accrediting Engineering Programs, Effective for Evaluations during the 2005-2006 Accreditation Cycle," ABET, 2004. (<http://www.abet.org/images/Criteria/E001%2005-06%20EAC%20Criteria%2011-17-04.pdf>)
- [4] Ford, Julie and Linda Riley, 2003. Integrating Communication and Engineering Education: A Look at Curricula, Courses, and Support Systems, *Journal of Engineering Education*, October 2003, 325-238.
- [5] Sawyers, David and John-David Yoder, 2006. Teaching Technical Communication within a Freshman Engineering Course Sequence. *Proceedings of the ASEE North Central Section Conference*, Fort Wayne, IN, March 2006.
- [6] Yoder, John-David, David Sawyers, John K. Estell, and Laurie Laird, Proofreading Exercises to Improve Technical Writing in a Freshman Engineering Course, *Proceedings of the ASEE National Conference*, Chicago, IL, June, 2006.
- [7] Ribando, Robert J. and Edward A. Weller, 1999. The Verification of an Analytical Solution: An Important Engineering Lesson, *Journal of Engineering Education*. 1999, 281-283.
- [8] Petroski, Henry, 2006. "Refractions: Engineering and History," *PRISM* magazine, October 2006.

## APPENDIX I: One-Minute Engineer Assignment

### GE 104 Engineering Design One-Minute Engineer

**Due: on selected date**

**Fall 2006**

#### **Overview:**

Each student will prepare an individual “One Minute Engineer” (OME) piece for presentation to the class. These presentations should be coordinated with your professor before your proposed presentation time slot. The only write up needs to be an e-mail at least 24 hours prior to the class for final consent. OME presentations should be short (one minute ideally...two minutes maximum). You are encouraged to use physical and visual aids in your presentations, but if you elect to do so, you are still expected to be mindful of the time constraints imposed on the exercise. If you use PowerPoint, it should only be to show graphical content.

Once you have established a potential topic, e-mail your professor 48 hours or more before class time for notification, topic approval, and an exchange of ideas for your OME presentation. Topics will not be allowed to be duplicates, and will be assigned on a first-come, first serve basis. The schedule will be set week-to-week, with volunteers getting the first choice of time slots.

Your OME may deal with a topic in one of the following categories of topics, or you may suggest an additional engineering category for approval:

#### **Product or Device Presentation: “The Demo Minute”**

Demonstrate a device or product and the engineering principles used in its operation. Choose a design that interests you personally and comment on what you regard as its commendable features. The device need not be just for business purposes, its functionality may be through its entertainment value or simplifying everyday tasks.

#### **Newsworthy: Current Events or World News**

Discuss current or world events that in some way relate to Engineering. Without limiting your areas of interest, you may like to consider offering solutions to a social problem which has occurred or perhaps discuss how a disaster was prevented.

#### **Biography: Engineers with an Impact**

Present a person who has made an impact in the field of engineering and how their work made that impact and what if any device they invented. You may choose a person of interest to you – or who is in the field of engineering of interest to you.

#### **Vocabulary: Word of the Day**

Introduce one or more relatively unfamiliar terms used in engineering which you think will ignite or stimulate the class’ interest in engineering. The word itself may be new to you or it may be that its application creates the new association.

All students participating in this exercise will receive credit in their final grade where adequate work is presented. Details presented in OMEs may form the subject matter of quizzes or tests throughout the course.

*Date of OME:* \_\_\_\_\_

*List of Possible Topics:* \_\_\_\_\_

**APPENDIX II: One-Minute Engineer Assignment Grading Rubric**

**GE 104 – Freshman Engineering 1  
Fall 2006 – Instructor**

**One Minute Engineer Presentation Scoresheet**

Student: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Checklist:

- Email establishing topic received from student at least 24 hours in advance, excluding weekends.
- Topic area selected:    Biography            Device            Newsworthy            Word of the Day
- Topic: \_\_\_\_\_

Presentation: elapsed time \_\_\_\_\_ seconds

	<b>Practitioner - 3</b>	<b>Intermediate - 2</b>	<b>Novice - 0</b>
Length of Presentation	▪ 60 to 120 seconds	▪ 45 to 59 seconds ▪ 121 to 135 seconds	▪ < 45 seconds ▪ > 135 seconds
Volume/Diction of Presenter	▪ Easy to hear	▪ Cannot hear at times	▪ Difficult to hear
Rate of Presentation	▪ Appropriately paced – neither too fast nor too slow	▪ At times rushing too fast or overly pausing to fill time	▪ Predominantly too fast or too slow
Presenter's Level of Interest	▪ Interested ▪ Highly prepared ▪ Enthused	▪ Somewhat interested ▪ Adequately prepared ▪ Neither enthused nor bored	▪ Uninterested ▪ Unprepared ▪ Bored

Comments:

Final score: \_\_\_\_\_ Evaluator: \_\_\_\_\_

### APPENDIX III: Pre-Survey

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Please truthfully answer the following question based on the scale provided below *and* provide comments:

<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neither Disagree/Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

I feel aware of engineering issues in history.

1                      2                      3                      4                      5

I feel aware of engineering issues in my surroundings.

1                      2                      3                      4                      5

I feel aware of the engineering issues in current world events.

1                      2                      3                      4                      5

Comments:

**APPENDIX IV: Post-Survey**

**Evaluation & Feedback:  
*One-Minute Engineer Presentations***

Please answer the following questions based on the scale provided below and provide comments:

<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neither Disagree/Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

1. Due to the activities of the *One-Minute Engineer* presentations, I feel more aware of engineering issues in history.

1                      2                      3                      4                      5

Comments:

---

2. Due to the activities of the *One-Minute Engineer* presentations, I feel more aware of engineering issues in my surroundings.

1                      2                      3                      4                      5

Comments:

---

3. Due to the activities of the *One-Minute Engineer* presentations, I feel more aware of engineering issues in current world events.

1                      2                      3                      4                      5

Comments:

---

4. The *One-Minute Engineer* presentations are interesting.

1                      2                      3                      4                      5

Comments:

---

5. The *One-Minute Engineer* presentations may be useful.

1                      2                      3                      4                      5

Comments:

---

over → →

---

6. Which form of OME did you choose to *present*? Circle one or a combination:

Vocabulary

Product/ Device Presentation

Newsworthy

Biography

Why?

---

7. Which form was your favorite to *watch*? Circle one:

Vocabulary

Product/ Device Presentation

Newsworthy

Biography

Why?

---

8. In addition to the presented content and its educational value, what do you think were some of the additional objectives for having the OME?

---

9. Please suggest other forms of One-Minute Engineer presentations or for ways to improve the activity:

---

*Thank you!*