

THE IMPACT OF GUEST SPEAKERS IN THE SCIENCE CLASSROOM

by

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ABSTRACT

In this investigation, guest speakers were implemented into 9th, 11th, and 12th grade science classes to determine if there would be an impact to student interest in the content area, attention to class work requirements, motivation, and future career plans. It was the hope that, in hearing real-world success stories from individuals other than their everyday teacher, they would see beyond what they perceive as limiting factors and recognize their ability to have successful futures. The findings suggest that there are multiple factors pertaining to the attributes of the presentation/presenter as well as the information shared in the presentation that may influence these student perceptions.

INTRODUCTION AND BACKGROUND

Project Background

Encouraging my students to strive to achieve at highest academic levels possible continually proves to be a daunting task. For some time, my colleagues and I have attributed this difficulty to the fact that our students just seem to have a profound lack of care or concern about what they are doing (academically) at school. I also believe that this lack of care is not an entity unto itself. Rather, it is symptomatic of a larger problem.

My mounting frustration with this perceived lack of care caused me to address it (informally) with one of my math classes during the fall of 2009. I shared with them that I was seeing an increase in late homework that was resulting in poorer and poorer general performance on assessments because the students had not completed the practice examples that the homework provided. I asked them why they thought students do not seem to understand that the reason teachers assign work is not due to a strong desire that the teacher have something to do late at night and into the approaching weekend (scoring work and preparing lessons). Rather, what we ask them to do has great relevance not only to what they accomplish at school every day, but also to what they will be able to do in their future. They took my question quite seriously, so I pulled up a chair and sat with them as they shared what they were feeling.

My students shared that they no longer believe that anything they do, or don't do, either in school or out, will change the fact that they believe their future is bleak. They specifically cited the seemingly endless and "pointless" wars all over the world, worldwide economic strife, and the global energy "crisis". They live in a small, rural, economically depressed town (population approximately 2,500) that has its economic

base rooted in farming and the lumber industry. Both of these industries have been severely impacted during the current economic downturn. All three of the local lumber mills have shut down; two permanently. The impact of these shutdowns was extreme for the families of my students. A quick mental analysis of each of my classes in the days following the layoffs saw virtually no family left untouched. Everyone had a parent, grandparent, or sibling that had lost his or her job, some after almost 25 years of service. These jobs ranged from basic laborers to highly trained technicians and mechanics, to administrators. No level of employment was left untouched. Students shared their concern that if even people who had done everything the “right” way for years (gone to college, stayed loyal to their employers, and always put in extra hours when needed) had lost their jobs overnight, what hope did they have for a future anywhere? How are they going to get any kind of a start, even if they do go to college? What possible difference would it make to do something as seemingly meaningless as homework? Further, my students shared that they just do not make connections between the content offered in the classroom and what they believe they will need in their future career paths. To further complicate matters, many simply do not even know what their career paths might be, so they make even less connection to content areas.

As an educator, I was incredibly moved by this very honest dialogue shared with my students. I was suddenly aware of the fact that it is not enough for teachers to know that they are helping to prepare their students for future jobs and college experiences, but that, somehow, we need to impress upon the students themselves a better understanding of what the overall objective of their education is. It is my job to help my students become aware of what a successful experience in their math and science courses can

mean to their future, despite anything they may view as an obstacle now. I must help students in my classroom see that, despite the high rate of job loss in our already economically challenged area, they can still achieve great things and have bright futures if they continue to focus on their studies, especially in both science and math.

All teachers have certain boundaries and parameters within which they must work. I reflected on those aspects of my job that are dictated (such as the curriculum I must teach within the guidelines of standards) as well as those things that are left to my design (the ways I can meet those aspects). I decided that my students should hear and experience more real-world success stories so that they might see beyond their perceived limits, whether external or internal. As a parent, I have experienced what many parents before me have: what I tell my children often falls on deaf ears, yet the same thing shared by someone else is received with great openness. The same scenario often exists for teachers. The thought occurred to me that effective use of guest speakers in my classroom might help alleviate this problem.

My research will focus on maximizing the guest speaker experience for my students. I hope that, when experts in the work force share with them, they might find these speakers helpful to their ideas about possible success in their own futures. Specifically, I am wondering what some of the contributing factors to choosing effective guest speakers might be. In these tough economic times (which always seem to exist in education), it is certain that any paid professional speakers are a limited resource. It follows, then, that every attempt should be made to employ these limited resources at a time and in such a way that maximizes the benefit to the student. The goal of my action research is to host guest speakers in my classroom and incorporate a variety of

assessments to try and determine what can be done so that the impact of these speakers can be maximized for all.

Focus Question

What factors contribute to selecting a guest speaker who helps students make connections between the importance of best academic performance and future career goals?

Sub-questions

1. What grade levels (9th, 11th, or 12th) show the greatest impact from visits to the classroom by guest speakers?
2. What is the impact to student motivation to achieve at higher levels after experiencing a guest speaker's presentation?
3. What attributes of a guest speaker increase student engagement?
4. What size/style of presentation by a guest speaker results in increased student engagement?
5. What pre-speaker/post-speaker practices by me can best prolong/promote the impact of a guest speaker?

CONCEPTUAL FRAMEWORK

To help me make decisions about not only how to implement these intended actions within my classroom, but also how to assess the validity of doing so, I looked to the findings of others who have put the same into practice before me.

All of the articles I found regarding use of guest speakers in the classroom reflected the same theme: planning, planning, and planning. An article by Tamara Sniezek (2005) shares many ideas that help teachers avoid potential problems when a guest speaker is to be implemented in the classroom. She supports the use of guest speakers as, “Research indicates invited guest speakers can build linkages between academia and the practitioner, improve community-school relations, provide professional role models for students, and greatly enhance student learning” (Sniezek, 2005, p. 1). She brings up the fact that the average college graduate in education has received little if any training in the use of guest speakers. I am a testimony to that fact.

Sniezek (2005) states that many of the problems involved with having effective guest speakers in the classroom center around not having enough planning go into the project. The teacher must gather sufficient background information on the speaker, often obtained from other colleagues or other local experts, and they must be employed as a part of the current topic being taught (a part of the curriculum rather than an “add-on”). It is also crucial to meet prior to the presentation and follow up on verbal plans in writing. When the guest speaker arrives to present, try to have a plan that avoids a lecture (unless that is the speaker’s desire) and conduct more of an interview. This allows the teacher to maintain control and direction, avoiding off-topic pitfalls. This single article taught me

more about how to implement a guest speaker and explained some of the problems of the past that I wasn't even aware that I didn't know. I included it in my "go to" file in my desk so that I had it in hand as a guideline when I made plans for my speakers.

James M. Lang (2008), an associate professor of English at Assumption College, shares a personal experience of a failed visit by a guest speaker. He designed a visit by a journalist that specialized in writing of argument such that he would be interviewed by the students. Insufficient planning resulted in a failure of students to participate. It ended up being a long class period of dialogue between just the guest and the teacher. In an effort to never have this sequence of events happen again, Lang pursued techniques in effective implementation of the guest speaker. He found that all three parties (student, teacher, and speaker) must benefit from the experience. This was interesting to me as I had never thought of the experience in terms of the presenter. Too often, I think I get into the mode of searching only for someone who has something to offer my students and me, rather than the other way around. What a novel thought - invite a guest speaker to my class because *we* have something to share. In addition to ideas already learned from other articles, I liked Lang's conclusion, "the real clincher is for the teacher to create a tight fit between the course objectives and the speaker's purpose in being there" (Lang, 2008, p. 5).

Theresa London Cooper (n.d.), a 17 year veteran teacher in the NYC Department of Education and most recently a facilitator at the United Federation of Teachers (UFT) Teacher Center as a professional developer, takes the idea of the guest speaker to a whole new level. She promotes the idea of a full career day involving large numbers of students with large numbers of presenters. "Inviting guest speakers into your classroom is a

wonderful way to introduce professions and career choices to your students and give them opportunities to reflect on what they might become” (Cooper, n.d., p. 1). I was intrigued by this idea, as it aligns so perfectly with my objectives. She describes having a school-wide visit with as many as three professionals per classroom all at the same time. These would include business people, parents, etc., and each would give a 10-15 minute presentation on their job. While I think such an idea certainly has validity and would undoubtedly be very powerful, I’m not sure that the long-lasting value would reflect the inordinate amount of time such an undertaking would require.

More specific educational advantages to inviting a guest speaker to the classroom are shared by Carole F. Robinson and Peter J. Kakela (2006). Their findings align with my founding premise that thoughts shared or taught repetitively by the same source (parents and teachers) tend to fall on deaf ears. They state that, “When students sit passively as their professor delivers information by lecturing (“drones on” one student called it), they often do not become engaged in their learning” (Robinson & Kakela, 2006, p. 204). They suggest that inviting guest speakers in to share this information offers students multiple ways of seeing and knowing. Guest speakers can more readily employ techniques that are more playful and sometimes more interactive, since they are a one-time event and this practice will not become common-place. Also, they share that the use of guest speakers affords the teacher the opportunity to have someone share who possibly has more highly developed knowledge, expertise, or skill in the area of interest. They state that, “Small changes in approaches and practices to teaching and learning in higher education can have great impact on students and how they learn, connect, and thrive as whole persons” (Robinson & Kakela, 2006, p. 206). Along this same vein, “A good visit

can have ripple effects that go on for months, sparking further exchanges among faculty members and students . . . “ (Berube, 2010, p. 4). In fact, in a follow-up survey administered at the beginning of the 2006-2007 academic year to 34 Information Technology (IT) students who were part of a capstone project administered in academic year 2005-2006 which focused on guest speaker events, 83% still rated the benefits of this experience as “definitely benefited” or “benefited very much” (Kamoun & Selim, 2007, p. 94). This long-term impact is precisely what I want for my students and my school community.

Information found in an article by Lindy G. Poling substantiated the benefits of inviting guest speakers from the community to the classroom. She shares ideas from a program called Community-in-the-Classroom (CIC) and its impact on student learning and character development. “Best Practices in a Community-in-the-Classroom (CIC) Social Studies Program Guide,” provides details on the CIC methodology and gives practical suggestions for developing a network of community guest speakers. The guide is available free at www.wcpss.net/community_in_the_classroom/. At the heart of the program is the idea that bringing community members in to the classroom provides students with experiential learning opportunities. The study done with IT students also supports this idea. In that study, 77% of the 34 students surveyed rated exposure to practical real-world IT knowledge as “excellent” or “very good” (Kamoun & Selim, 2007, p. 100). Poling further shares what should be done to prepare for a guest speaker as well as what should be done after the visit to prolong the experience. Her conclusions are exactly what I am hoping the findings of my research support: “By bringing well-informed guest speakers into the classroom, we can encourage our students to assess

multiple points of view and to think more creatively and critically about their course work. . . . The content students learn no longer seems like just “schooling”; it is part of the real world” (Poling, 2000, p. M10).

Exploring the world outside of my own classroom through these articles was enlightening to say the least. The findings and ideas of other professionals spurred me on to a greater sense of purpose and excitement for my action research plan.

METHODOLOGY

Attempting to research my question fully, I implemented guest speakers into my three science classes. The science courses I teach are: 9th grade physical science (advanced) with 15 students, 11th grade environmental science (general) with nine students, and 12th grade physics (advanced) with 6 students. Each group experienced at least two events, and two groups experienced three events. These events were staggered between September and March of the school year 2010 - 2011, as need aligned with subjects being covered in class. There were a total of six different speakers who either visited my classroom with individual groups, met with combined groups of my classes, or visited the entire school population. The list of guest speakers included three different specialists in the specific science fields of wildlife biology, electricity, and weather, as well as a motivational speaker and a fellow colleague from the English department in my own school. Table 1, Appendix A lists the speakers and the topics they brought to my classes in greater detail. The research methodology for this project received an exemption by Montana State University's Institutional Review Board, and compliance for working with human subjects was maintained.

When implementing my guest speaking events, I tried to heed the preparatory steps that my research indicates are best practices, as outlined in my conceptual framework. Since the research indicates that there must be a tight fit between the course objectives and the speaker's purpose in being there, I implemented guest speakers whose expertise matched the content area of instruction. For example, meteorologist Ted Shapiro visited when my environment class was studying Earth systems and my physical

science students were studying weather. In order to provide comparison data, I allowed my physics students, who were not studying anything pertinent to weather at the time, to attend Mr. Shapiro's visit as well. In planning for time, each guest had approximately 40 minutes for their presentation unless they indicated that they needed more. That is the length of one class period and what my students seem preconditioned for in terms of attentiveness. Pre-planning with the speakers was imperative in planning for any accompanying activities or equipment they needed. Mr. Shapiro, for example, requested internet and projection capabilities. Since his presentation was one that he often does in schools, he requested that he have at least 90 minutes available. This was perfectly fine with my administration, as long as I made arrangements with the other teachers affected by my change in their students' schedule. As my findings indicated in my conceptual framework, it was important to work with each speaker prior to the event so that both he/she and I understood each other's needs and expectations.

A complete matrix of the instruments I used to collect data is found in Table 2, Appendix B. Most of the instruments I used to collect data were classroom assessment techniques (CAT's) from *Classroom Assessment Techniques, A Handbook for College Teachers* (Angelo & Cross, 1993). A CAT is a tool that teachers use to get feedback from students about a variety of things. Its difference from other types of assessments is that it is designed primarily to assess such things as how a student feels about a teaching style, or how he/she feels about how well he/she is doing, rather than simply assessing attainment of content. This was especially useful to me, because I am interested more in student attitude and esteem than I am in level of learning for particular content areas. Other assessments were the more traditional methods of tracking grades and timeliness of

assignment completion as well as direct observation.

One of the assessment techniques that I enjoyed most was a modified version of the Quality Circle. In this situation, I gathered students in a circle and conducted a group interview. I believe that the use of Quality Circles allows students the best opportunity to share what may be a wide variety of specifics about the speaker that may have influenced their experience. Quality Circles allow for a more student-directed approach to assessment rather than a teacher-driven list of questions for them to answer. I audio taped the discussion, and then later transcribed it in order to make some generalized conclusions. The students and I really enjoyed the freedom that this type of round-table discussion offered, and they were so forthcoming with information that I was often surprised. If I had tried to address my questions in a more traditional way, such as a survey, I could have potentially received responses that were limited by the depth of my questioning.

There was no set of prescribed questions for me to use with this type of assessment since it was student-directed. There were, however, some particular pieces of information I was specifically interested in. I specifically wanted to know if it made a difference to students if the guest speaker was someone they were familiar with or if they were just as engaged and interested if it was someone that they had never heard of before. I also wanted to discover if the students made connections between what the speaker shared and what they had studied, as well as if they thought they learned better from hearing from a professional or reading a book. The final issue I wanted to inspect was the possible impacts the guest speaker had on student's career plans. I was, however, very careful to not ask my questions in such a way as to be leading toward prescribed answers.

Working through the transcribed recording allowed me to group together similar ideas and assign some measures of quantitative analysis. Example: One student says, “Oh wait? That people are feeding deer way too close to the road.” On the audiotape I heard many voices chime in with agreement and have a record in my notes that six of the seven agreed with this statement. I also had my observations that I could use to compare what students thought they were doing with what I actually visually observed. Example: Students said that they were paying attention, but my observation shows that they were only answering my questions with strong prompting. I now had the ability to transition qualitative data to quantitative data that I could reasonably draw some possible conclusions from.

When time did not permit me to conduct Quality Circles after a treatment, I relied on written surveys. I tried to keep these surveys short and similar for each speaking event. I thought of it as designing an assessment in a familiar format each time, such as true/false or multiple-choice. In so doing, I believed students would be more comfortable with the format and thereby spend more time in thought for their responses.

Use of both of these methods of assessment, Quality Circle interviews and surveys, allowed me to provide for both the validity and reliability that is necessary in research. Validity was provided in conversations and written feedback from colleagues. My editor, Cheryl, provided extensive help in accurate writing of my survey questions so that they would not inadvertently prompt students to prescribed responses. While the surveys were also designed to specifically address the needs of each question, I could not be sure that students would respond in ways that would provide usable data. Cheryl’s modification of my questions, together with the similar design of the surveys one to

another, helped provided the consistency necessary for good reliability in their results.

Nancy Truman provided feedback on my surveys as well, but with the overall process of my research activities. She had recently conducted her own capstone research in another content area and was very helpful in providing information as to accepted research techniques. Finally, both validity and reliability in my research techniques were further supported by comparison with the methods being employed at the same time by Jan Perry in her classes. Some of her students also experienced one of the same guest speakers that my students did, but at a different time and for a different subject. She used the same feedback survey that I had in my class. We compared general trends that we found from this data and were able to recognize some similarities as well as identify some possible reasons for differences.

Once all of the interviews had been conducted and surveys taken, it was time to assimilate data. Much in the same way that similarity between surveys was important, I found it helpful to organize and data in the same way, similar information together. I went through the data for each speaker, consulted my data collection matrix (Appendix B) to determine which of my sub-questions I had hoped this data would help answer, and then organized them together by question. The following section reports what I found for trends.

DATA AND ANALYSIS

While looking for trends in my data, I considered data from all speaking events as they related to my sub-questions. I have reported my findings, however, by individual speaking event. In each section, you will find a brief description of the event/speaker, a description of the instrument(s) used to collect data from this event, charts/graphs showing the relevant findings from the data, and a brief summary of what those findings told me in relation to my research question(s).

Motivational Speaker

One of the first guest speaking events my students had this year was a speaker who presented to all middle school students (~75 students, grades 6 – 8) and all high school students (~100 students, grades 9 – 12). The speaker was Mr. Ed Gerety. He is a motivational speaker who specializes in encouraging students to be aware of the dangers of bullying and, in general, to appreciate themselves, their families, and their friends. His presentation was about 45 minutes long during the last period of the day. He presented again right after school to the entire staff (all pre-K – 12th grade teachers and support staff), and then again that evening for the general public.

Since this was not an event I planned or was even aware of until it happened, I was not prepared, and so I did not collect any data immediately afterward. I did not, however, want to lose out on the information that this event could supply for my study. Since many students seemed to really enjoy Mr. Gerety's presentation and talked about it regularly for several days after, I decided to wait until some time had passed and then collect information to see if students maintained the same enthusiasm about him over a

period of time and to see if there was any variation of interest levels between the age ranges who participated in the event. Instead of investing the time that interviews might consume to address such finite data, I instead collected data using a short written survey (Appendix C). I administered this survey to the students in the three classes that are my focus group. I asked them to complete this survey one month after the actual presentation during the first 10 minutes of their class. All data was collected anonymously with only the class they are enrolled in indicated, not their names, since I was only interested in collecting data as it relates to age difference rather than gender or any other disparities.

On the day of the survey, 15 freshman, four juniors, and five seniors completed it. Figure 1 shows the results of answers to question #2 of the survey, “On a scale of 1 – 10, how much did you like the presentation by Mr. Gerety? (1 is not at all, 10 is very much)”:

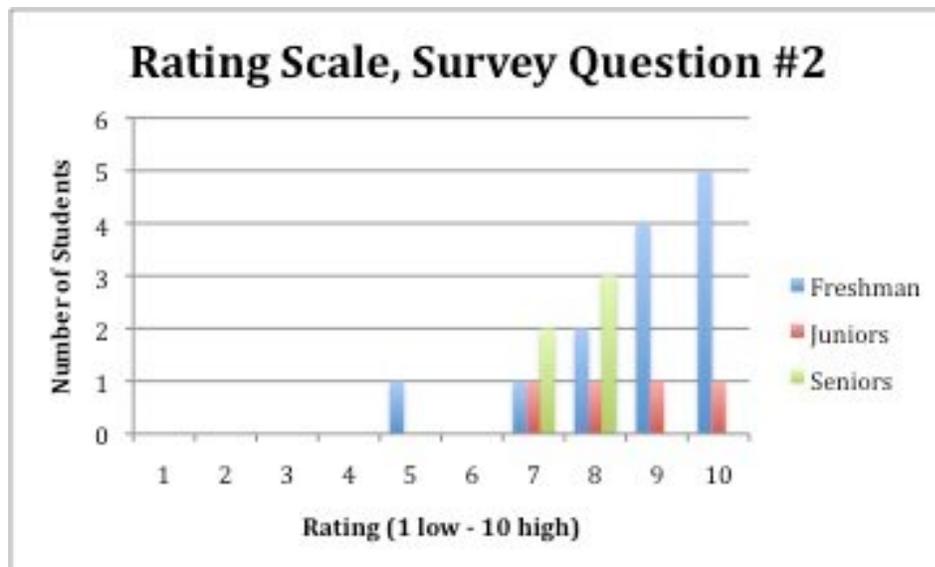


Figure 1, *Correlation of Enjoyment of Presentation to Age of Student, Ed Gerety, (N=24)*

It should be noted that of my 15 freshmen surveyed, only 13 were present on the day of the presentation and so did not complete the survey after question one. Almost

70% of the freshman gave a rating of nine or 10, while none of the seniors rated it above an eight. Bearing in mind that his presentation was in the first week of the school year, I think there could be two possible reasons for this difference. First, seniors are older and presumably more mature. They were starting their last year of high school, so they had dealt with issues of bullying for some time. Most of them have likely already developed some sort of coping skills. Freshmen, on the other hand, right at the beginning of their first year of high school, are usually experiencing a fair amount of apprehension in dealing with older students. A presentation about ways to deal with bullying was likely a much welcome topic.

Most of the other questions in the survey were designed to dig at the specific likes and dislikes about the speaker. All students indicated that they would recommend a friend attend a presentation by this speaker. Of the 49 different reasons shared as to why they would make this recommendation, 37% indicated it was due to the presenter's humor. Of the 24 different responses for things that student's didn't like about the presenter, 54% said there was nothing they didn't like. "It was all good!" was the recurring theme.

Another important piece of information that I was hoping to gain insight on was student's attainment and subsequent retention of the main theme of the speaker. When asked, "What was the main point of Mr. Gerety's presentation?," the overwhelming top responses were that "Bullying is wrong" and "Treat others well and be kind". There were a total of 34 different answers to this question (some of the 24 students surveyed gave more than one response), and these two answers accounted for 50% of that total. Table 3, (Appendix D) shows a complete list of the responses. It is important to note that the other half of the student responses to this question were all topics that Mr. Gerety covered, but

not necessarily the main point. Since the time of this event, I have had several occasions to witness student references to Mr. Gerety's presentation. During his presentation he used a clapping technique to gain student attention and focus, and one of my colleagues has employed this same technique in her classroom with good results. I recently attended a 504 (a designation for a student who does not qualify with a disability for a full individual education plan {IEP}, yet has some qualifying factors that require certain portions of the classroom structure modified to meet a need) meeting for a student, and he made reference to Mr. Gerety's presentation as something that he often thinks about and draws strength from when he is feeling bad about himself or others. Mr. Gerety taught our students about "dream boards" (making a poster collage depicting everything they hope for in the future, both short and long-term) and several have done this on the inside of their locker door. I thought these numbers and types of responses strongly indicate that, given a dynamic and enjoyable speaker who is viewed as credible, students tend to remember the points of the presentation for longer periods of time.

Meteorologist

The second speaking event for my students was a visit from the meteorologist from our local television station who also teaches a course on weather at the local university. His presentation covered weather anomalies and prediction techniques. He had some of the tools he uses for his job with him and showed a variety of video clips and photos. The presentation was given to one large group during a double period (90 minutes) at the end of the day. He visited with all of my science students as well as the science students of my colleague, Jan Perry. His visit coincided with a unit I was doing on the atmosphere with my juniors in environmental science and a unit on weather with

freshman in physical science. His presentation did not connect in any way with what we were studying in senior physics, but they were invited to hear his presentation anyway.

Surprisingly, the findings, gathered from a survey, which can be seen in Appendix E, for how much students enjoyed this event seemed opposite those of the first event. When asked in question #2, “On a scale of 1 – 10, how much did you like this presentation? (one is not at all, 10 is very much)”, with 14 freshman, five juniors, and six seniors taking the survey, the freshman rated this event much lower than they did their first event. None of them rated the speaker at a 10. In fact, 42.8% rated it at or below five, 28.6% at seven, and 28.6% between eight and nine. The five juniors, as for the first event, were evenly split but at a slightly lower range of five to eight. The six seniors, however, rated this event much higher than their first event with 83.3% rating it at eight or nine and 16.6% at a five. Like the freshman, none of the seniors scored the event at a 10. Figure 2 shows a complete distribution of the data.

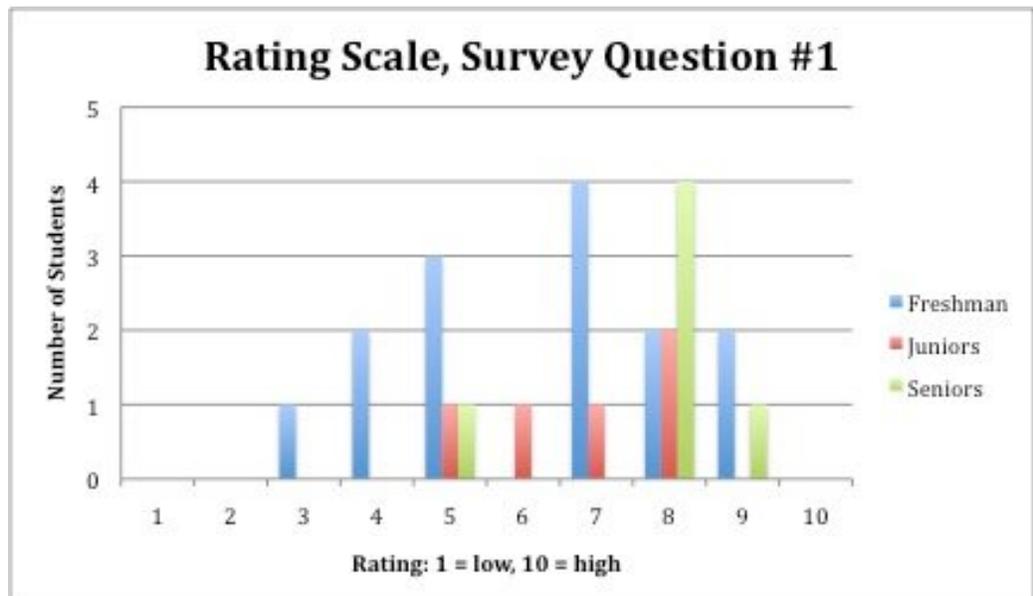


Figure 2, *Correlation of Enjoyment of Presentation to Age of Student, Meteorologist, (N=25)*

When asked why they assigned their ratings, the predominant theme for the freshmen was that they found it boring and hard to stay focused. Many said he should have shown more videos. The student who gave the lowest score said, “I thought it was kind of boring and that he was a little self-absorbed.” The speaker did share the history of how he became a meteorologist and many of his stories and photos were of his past experiences from around the country. The recurring theme for why the juniors chose their rankings was that, while they thought the event was too long and could have been more exciting, they found the pictures and videos were interesting and held their attention. The seniors, when giving reasons for their higher rankings, shared that they found the presentation interesting, factual, and delivered with humor. Despite these slightly lower rankings from the previous speaker, 84% of the 25 students surveyed said they would recommend this speaker to a friend.

Another point of interest I inspected from this event was how my students felt about the information in the presentation. I often wonder, whether it is a teacher or, in this case, a guest speaker, how effectively students separate their likes or dislikes of the person presenting from the importance of what the presenter offers for content. They were asked, “Please rank the value of the information given in the presentation,” and given the same choice of scale with one being low and 10 being high.

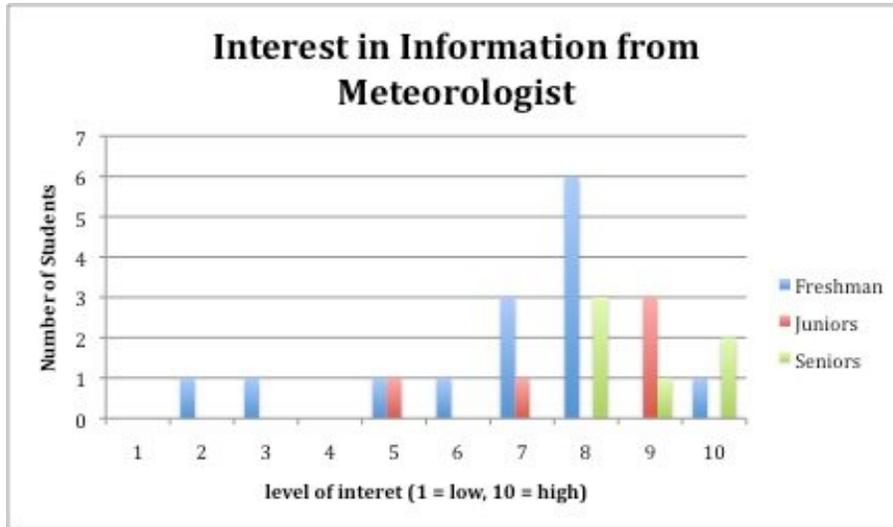


Figure 3. Correlation of Interest in Information to Age of Students, Meteorologist, (N=25)

As seen in Figure 3, when I compare student’s rating of interest in the information learned from the presentation, there is a significant difference from that of interest in the overall presentation itself. I calculated percentages of each based on ratings less than or equal to seven and those greater than seven. Table 3 describes this comparison.

Table 1
Comparison of Ratings (Presentation vs. Information in Presentation), Meteorologist, (N=25)

Comparison of Interest in Presentation to Information Contained in Presentation (1 = low, 10 = high)						
Rating	Freshman		Juniors		Seniors	
	≤ 7	>7	≤ 7	>7	≤ 7	>7
Presentation	60%	40%	71.4%	28.6%	16.7%	83.3%
Information in Presentation	40%	60%	50%	50%	0%	100%

The percentages described in Table 3 show that all three age groups rated their interest in the information presented by this speaker higher than they did their interest in

the presentation itself, with each showing an increase in ratings above seven. The largest change occurs within the junior environment class with a shift of 21.4% of the vote. Comments as to why they chose this ranking included, “He gave a lot of good information, I just wish he would have made it more exciting.” Interestingly, 100% of the senior class highly valued the information presented. Four out of the five seniors mentioned under their reasons for ranking that most of the information he shared was something they didn’t already know. This follows logic since this was the class that was not studying this particular content area at the time of the presentation and would suggest that, even if the speaker were not that enjoyable, if the content was deemed worthwhile, students deemed the time spent valuable.

By comparison, at this point, I could see that my younger students seemed much more focused on the style of the presentation than my older students. While my younger students enjoyed the motivational speaker more than they did the meteorologist, the opposite was true of my older students. Likewise, my younger students, when asked why they gave the rating they did, predominantly cited the fun in the event. My older students referenced the content of the event. This might be an indicator that more mature students use quality of information in a presentation as the basis for rating enjoyment of a speaking event while younger students base their rating more on style of delivery.

Wildlife Biologist

My junior environmental science class, a general level course with a small group of students, including two who receive services from the resource room, was the only one to have the wildlife biologist from the Maine Department of Inland Fish & Wildlife as a

guest speaker. On the day of the event, only eight of my 10 regular students were present. Our class was working on a unit of study about populations and what impacts their success or failure on Earth. This speaker had been the chief organizing officer for the introduction of the wild turkey here in northern Maine. The first release of captured birds was within our school district. This fact, coupled with the number of hunters and outdoor enthusiasts in my class, allowed me to gather data pertaining to a number of attributes, including familiarity of the speaker with the students, as well as the impact of a speaker when working with a smaller group. I used a Quality Circle to gather data about this event. There were eight students present for the interview, but only seven of them had been there the day of the presentation. One student who was present for the event was not present on the day of the interview. For purposes of reporting the data, $N=7$.

I specifically wanted to know if it made a difference to students if the guest speaker was someone they were familiar with or if they were just as engaged and interested if it was someone they had never heard of before. When asked to recall who the speaker was and where he was from, all students immediately responded in unison with the correct name and job title and where he worked with very little prompting. This told me that students were very familiar with the speaker even before the visit. Many indicated in side conversation with each other many other times that they had heard this particular speaker at other events in the community as well as interactions they had with him while he was at work in the field. This conversation, as well as my observations during the presentation of very comfortable and active interaction between my students and the speaker, led me to believe that these particular students were much more engaged than they would have been with a stranger.

I also wished to learn if the students made connections between what the speaker shared and what they had studied, as well as if they thought they learned better from hearing from a professional or reading a book. I asked, “. . . I’m going to ask you if you strongly disagree, disagree, agree, or strongly agree to this statement, ‘Many of the vocabulary words that the speaker used yesterday were the same as what we had already studied in this unit on populations.’” One student disagreed, five agreed, and one strongly agreed. Having a list of the vocabulary he used from a handout he gave us, I agreed with the five. I did discover a point of interest when checking grade status against the time of the interview. The student who disagreed had the lowest score in class, and the student who strongly agreed had the highest. When asked if they learned better from a presentation or from a book, there was an even split: four said from a speaker, four said a combination of both, and none liked learning from a book only (the student who was not there during the presentation voted because she knew this was her learning style preference). Understanding student preference in style of learning in this way might allow me to consider my timing of placement of a guest speaker in a unit of study for future. If I know that the speaker is going to approach, for example, the vocabulary of the topic strongly (as this presenter did), and that students are as attentive to content as they are when experiencing a guest speaker, I might consider saving the class time and book assignments spent and let it be covered by the speaker. After listening to my students, I couldn’t help feeling that a part of their time was wasted by double coverage of the same content. I had been thinking the value of a guest speaker was to enhance what my students were studying. Perhaps I need to trust that outside speakers can actually replace some of my direct instruction.

The final issue I wanted to inspect was the possible impact the guest speaker had on students' career plans. During the first week of school, I had asked all of my students in all of my classes what they had for plans for their future. I asked them if anything they had heard from this speaker had changed their minds or caused them to think about their future differently. Six students said no and one said yes. The student who said yes had already planned to work in a field pertaining to the environment. She said, "I was thinking about the environment, but now he's got me thinking about the wildlife piece of environment. I don't know." The other six had career plans not pertaining to anything within this field. This is a strong indication that, by the time students are juniors, if they have plans for the future, those plans are likely quite solid.

Comparison of this speaking event to my first two is difficult as they were vastly different. The first two speakers presented to large groups and were speakers that were not known personally to my students. This event was presented only to one small group of older students and the speaker was known by them. Further, I was looking for different information pertinent to my study from this event than from the others. This presenter had a short Power-Point presentation showing a combination of pictures and information, he used the whiteboard to chart out some information, and he utilized handouts. He has taught a college course as an adjunct professor in the past, so he had a smooth delivery, but his style was definitely lecture with moderate student interaction required. There were no hands-on activities. Still, my students were attentive and engaged for the entire presentation and interacted appropriately when asked. This could be seen as evidence of the same trend seen before that older students seemed to be impacted more by the value they place on content of the speaking event rather than style of presentation.

Electricity Specialist

This guest makes a visit to my classroom every year. She is the public relations and education outreach executive for the supplier of electricity for northern Maine. She works closely with the schools of the area and delivers presentations to classrooms of all ages. Her company sponsors an annual electricity contest where FFA (formerly Future Farmers of America) students compete for a scholarship in general electricity knowledge as well as wiring capability. She comes and speaks in all schools with an FFA chapter and leaves a box of supplies in order that they may practice their wiring skills in the week following her visit. The box then moves on to the next school with an FFA chapter. When she visits our school, she speaks to any and all students that we request, as some may choose to join FFA in subsequent weeks after her visit. She spoke to my freshman physical science class and my senior physics class. Both classes had just completed their unit on electricity. Her presentation to the seniors was a double period (90 min.) with the first half being lecture and the second more hands on exercises. Her presentation to the freshman was only for one period (45 min.) and included only the lecture portion of her total presentation with herself conducting some demonstrations.

This event was likely my best planned of the year. As a result, I was able to gather both pre- and post-event data in order to gather information, and, since one of the specific purposes of the presentation is to prepare students to participate in the electricity contest, I felt it was the best event to use to gather data about content knowledge gained from a presentation. I administered the same assessment to students in both the pre-visit questionnaire and the post-visit questionnaire (see Appendix F for questionnaire) to see if their answers would change. Table 4 shows the results of the questionnaire.

Table 2
Report of Freshmen Questionnaire Answers of Pre/Post-visit, Electricity Specialist,*
 (N = 13)

Question	Percent Change*
1. What is the name of the company that supplies power to your home?	-36.4%
2. Where does the electricity that this company supplies come from?	-9%
3. When your parents/guardian/landlord pays the electric bill, what is he/she paying for?	-33%
4. If you put up a wind tower at your residence, how will that help your electricity cost?	No change
5. What types of jobs are available if you work for a power supply company?	-57.1%

*Information is presented as a percent change of number of incorrect or “I don’t know” answers from before the visit to after. Negative percentages indicate a decrease in incorrect or “I don’t know” answers. Example: When asked in question #1 to name the local electric company, before the presentation, 11 freshman did not know. After the presentation seven did not know. This represents a 36.4% decrease in incorrect or “I don’t know” answers.

The questions in this questionnaire were rather simplistic, but were designed around what I knew the speaker would share during her presentation. While I did share correct answers with students afterward, their exact answers are not pertinent to the point of this study. All I was interested in for this study is whether or not students did better with their answers after hearing the speaker than before. All show a decrease in the percent of incorrect responses with one showing no change. The change in the first question, while one of the largest, was not of great significance to me other than it showed that students were listening and could recall the correct name of the company. The results of the last question regarding jobs in the field, however, made me take

particular notice to specific answers. The pre-visit responses to this question yielded some rather vague lists of possible jobs that predominantly included “electrician”. After the visit, there was a 57.1% reduction in “I don’t know” or incorrect responses. The possible jobs available at a power supply company that students listed after experiencing this event was extensive and much more specific. It included such things as secretaries, line workers, accountants, electricians, truck drivers, and engineers. Since finding ways to open my student’s eyes to potential career opportunities was part of my initial impetus in doing this research, this result pleased me.

Given this improvement in content knowledge, I was interested to discover what particular attributes of the presentation may have predicated it. Therefore, I looked at how students felt about the presentation and the information provided in the presentation so that I might repeat such an event in future. I administered the same survey that was used for previous speakers (see Appendix E) to gather data to assess these points of interest. Figure 4 shows the comparison of students’ ratings for the presentation to their ratings of the information in the presentation for my freshman class.

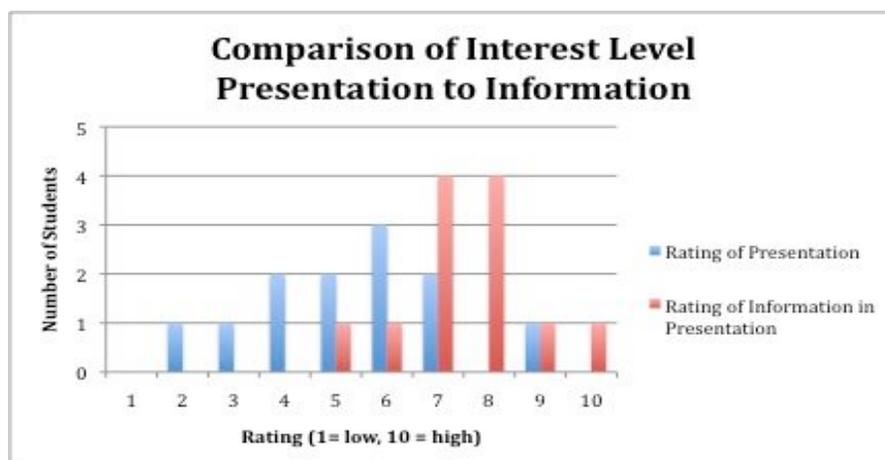


Figure 4, *Comparison of Student Ratings (Freshmen), Presentation to Information in Presentation, Electricity Specialist, (N = 12)*

What a surprise this data provided! Overall, my freshmen did not like this presentation very much. All except one student (~92%) rated the presentation at or below a seven. Reasons for the general dislike of the presentation included such comments as “I was bored” or “it was too slow-paced”, and “she didn’t have any humor or hands on things for us to do”. The one outlier with a rating of nine said “she had cool things to show us.” Given these dismal comments about the speaker, I would have expected the overall interest in what she shared to be equally as dismal, yet all except two (~83%) rated the information provided in the presentation at or above 7. Comments such as “this information is relevant to our future” and “I learned a lot of new information because she had good explanations” as well as “I didn’t like her much, but I know I’ll need to know this stuff someday” showed a surprising level of maturity from a freshman class. This showed me that, even if the speaker were not particularly dynamic, if the topic is on content students find interesting or deem valuable, they would still be attentive. Additionally, even given the apparent dislike of the speaker, when asked if they would recommend this event to a friend, 66.7% said yes they would. The predominant reasoning was, “it may be boring, but it’s necessary and you’ll learn things.”

The event with this same speaker was entirely different for my seniors. For most of them, this was not the first time they had experienced this same presentation. I administered the same instruments for data collection for this group as I did my freshman; pre-/post visit questionnaire and survey. Table 5 shows the percent change for incorrect or “I don’t know” responses to the questions on the pre-/post-visit content assessment.

Table 3
Report of Seniors Questionnaire Answers of Pre/Post-visit, Electricity Specialist,
 (N = 7)

Question	Percent Change*
1. What is the name of the company that supplies power to your home?	-80%
2. Where does the electricity that this company supplies come from?	-57%
3. When your parents/guardian/landlord pays the electric bill, what is he/she paying for?	-100%**
4. If you put up a wind tower at your residence, how will that help your electricity cost?	No change
5. What types of jobs are available if you work for a power supply company?	No change

*Information is presented as a percent change of number of incorrect or “I don’t know” answers from before the visit to after. Negative percentages indicate a decrease in incorrect or “I don’t know” answers.

**There was only one incorrect answer on the pre-visit questionnaire and none on the post-visit questionnaire. This -100% change represents correction of only one wrong answer.

Like the freshmen before them, the seniors had improvements in incorrect answers for both questions one and two and no change for question four. By comparison, however, the seniors exhibited no change for question five. This data is, however, somewhat misleading. The change for the freshmen was a result of a significant increase in the listings of jobs they provided on their post-visit questionnaire over that of the pre-visit. For the seniors, there was relatively little change because their lists, while certainly not listing the wide variety of the jobs available in the field, were fairly good in the pre-visit questionnaire. What is disappointing is that they did not change them at all for the post-visit questionnaire. As seniors, I would have hoped that they would be aware of many more career opportunities in the field of electricity; especially in light of the fact

that this was not the first time they had experienced this speaker. It is important to note that I cannot rule out the possibility that they simply did not take the questionnaires seriously.

There were some similarities to the survey results for the seniors to that of the freshmen. Figure 5 shows the data results indicating that they did not particularly enjoy the speaker either. Five out of the seven students surveyed (~71.4%) rated the speaker at or below a seven. They agreed with the freshmen in that it was “boring”, “had seen it many times before”, and “it wasn’t entertaining”. These comments did not surprise me, as I knew that they had experienced the same event many times and were very familiar with its content.

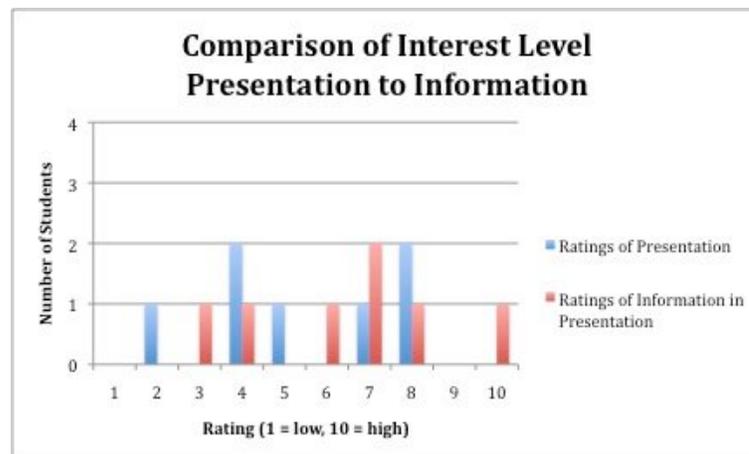


Figure 5, *Comparison of Student Ratings (Seniors), Presentation to Information in Presentation, Electricity Specialist, (N = 7)*.

Despite the fact that I anticipated the possible low ratings in interest in the speaker, I did expect that, since three out of my seven seniors were preparing for a contest based on the content of this event, they would rate the value of the information fairly high. They did not. Again, five out of the seven surveyed (~71.4%) also rated the information in the presentation at or below seven. The predominant reason cited was that “all of the information we already learned from other places”. It is important to note that,

while it does not constitute a true outlier, there was one rating of 10 in this category. The reason for this rating from this student was that he “hadn’t seen all of the demonstrations before”. While all surveys were anonymous, I do have one student who is new to our school in this class who had not seen this speaker before, and so assumed that this rating might have come from him. Apparently these seniors felt they were proficient enough with electricity given a brief study during their freshman year, a more complete study during their senior year, and then the added contests and this speaker twice before.

One last surprise presented itself in the data for this event. Despite the low ratings for both the presentation itself as well as the information in the presentation, ~71.4% of the seniors said they would recommend this speaking event to a friend. The reason given by almost all was some variation of the theme that, even though it’s boring, the information is still good to know. Perhaps some level of maturity given their age did present itself in this piece of data. I would imply that, while they did not value the information for themselves, they did value it for others who may not have their level of experience.

It would seem that the trend toward the value, and thereby the degree of impact, of a guest speaking event in the classroom being based on content is further substantiated. The one difference I did see at this point is that, with this speaker, even my younger students placed higher value on content than style of presentation. My theory of age of students at the time of presentation being an important factor no longer seems to hold true.

Fellow Colleague, Steve Wierzbowski

The final speaker for purposes of this study was a colleague of mine, Steve Wierzbowski, who teaches current events, English, and film and theater courses in our school. I asked him to speak to my freshman physical science class and my senior physics class as a follow-up to our unit on electricity and the presentation by the electricity specialist. Having done an extensive study while in college, Steve prepared a short Power-Point presentation on the history and writings of Benjamin Franklin. I thought it might be interesting to see student responses to a teacher who was known to them (all of my freshmen and seniors have Steve for other classes) serving as a guest speaker presenting in his own content area, but within the context of the science classroom. His presentation for both classes was approximately 25-30 minutes long, and he filled in the remaining 10 – 15 minutes of class with question and answer. The next day I asked students to fill out the same survey (see Appendix E) that they now were very familiar with.

Figure 6 compares the ratings freshman physical science students (12 surveyed) gave for how much they liked the presentation to how much they valued the information presented. Figure 7 does the same for the seniors (seven surveyed).

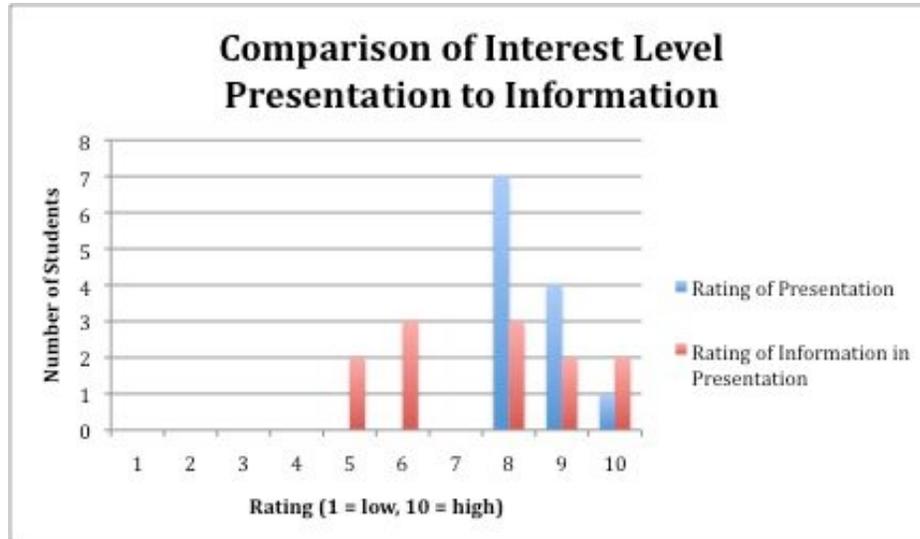


Figure 6, *Comparison of Student Ratings (Freshman), Presentation to Information in Presentation, Colleague Wierzbowski, (N = 12)*

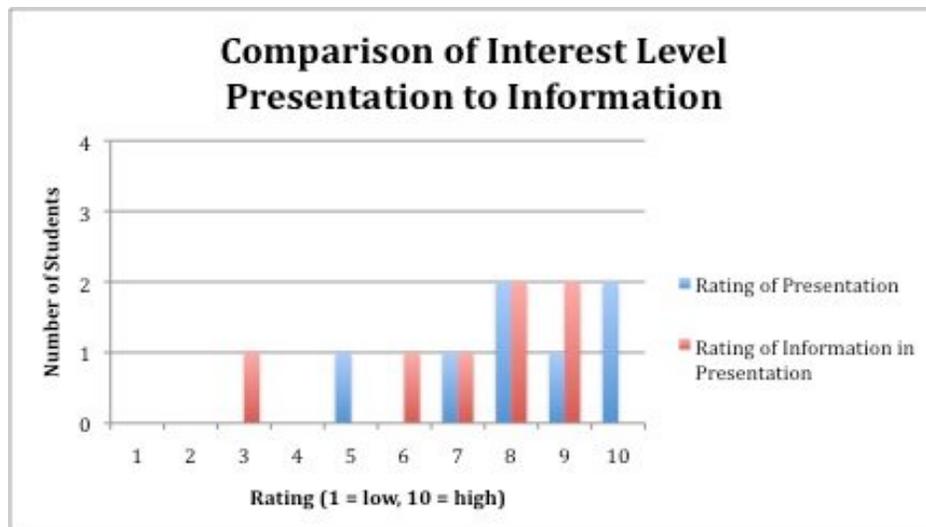


Figure 7
Comparison of Student Ratings (Seniors), Presentation to Information in Presentation, Colleague Wierzbowski, (N = 7)

This data seems to reflect something different, yet again, than what students indicated for previous speakers. The pattern for the freshman shows all high ratings for interest in the presentation (100% at 8 or higher) with all students indicating that their ratings were due to the humor injected into the presentation. The seniors report ratings

almost as high (~71.4% at eight or higher) all citing the same reason; humor. Students specifically liked that he built humorous facts into his slides such as the bulleted list of Franklin's inventions where he included such things as "i-pods and e-bay". They all also liked that he included an intermission slide. This is something he commonly does in his presentations and is nothing more than a 30 – 40 second funny clip from You-Tube. It is totally unrelated to the rest of the presentation and is designed to draw back any attention that may have wandered. The senior student giving the one low rating of 5 indicated that it simply was "not my brand of humor".

Unlike the previous speakers, the ratings for interest in the information provided by the event seemed to have negative correlation with how much they like the speaker. Despite the fact that ratings for the presentation itself were very high, interest in the information ran lower by comparison. One low rating by a freshman (five) said that, "it is good to know things about how electricity came about but I'm never going to need to know about the history". The very low score of three by a senior said, "this doesn't have anything to do with physics class." This would lead me to believe that perhaps, at least for a few, a good presentation topic outweighs how good a presenter might be.

Academic Achievement

Sadly, general academic achievement did not seem to change much during the course of this study beyond what I would expect as normal fluctuations. Other than the evidence that students had more correct answers and less "I don't know" answers for the electricity specialist presentation pre/post-visit questionnaire, there was no significant change in overall grades or timeliness of work. It is important to note that, with the

exception of my environmental science class, I teach all upper level courses. The tendency is that my students' grades run slightly above average, but there are times in the school year when they take a dip as a result of other activities and events that consume student time. I had hoped that these speaking events would help students push harder and maintain higher levels as a result of these speaking events. There is no data to support that this was the case. Bearing in mind that all speaking events were evenly dispersed throughout each of the first three quarters, Table 6, below, shows the change in number of missing and/or late work for the first three quarters of the year for all three classes that were a part of the study.

Table 4
Number of Missing and/or Late Assignments, First Three Quarters, (N=31)

	Physics (7 Seniors)	Environmental Science (9 Juniors)	Physical Science (15 Freshman)
Quarter 1	9	6 (6)*	5
Quarter 2	6	18 (7)*	1
Quarter 3	8	22 (9)*	3

*Reflects removal of data for a student who experienced extraordinary personal events as described in narrative below.

As the data shows in both of my upper level courses, physics and physical science, the number of missing assignments was relatively low for all three quarters. The dip in quarter two for both of these classes followed by subsequent rise cannot be directly attributed to the speaking engagements, as this is a usual occurrence for this time of year. We are such a small school that we barely have enough students to fill the membership

needs of our sports teams and other extra/co-curricular activities such as band, chorus, FFA, yearbook, etc. It seems that it is our upper level students who tend to be those who fill the need for everything. Quarter two is the only time of year that there seems to be a break in events. Soccer has ended and basketball has not yet started. By the time quarter three begins, students are very busy with basketball season followed closely by baseball/softball with only a week of break in between. They are also busy with the annual musical and other music competitions. On top of the entire bustle of this time of year, there are numerous interruptions from scheduled breaks and school cancelations due to weather. In much the same way that quarter two is always considered the most productive time academically, quarter three is always considered the worst.

The numbers for my general environmental science class do not really depict a true picture of the data. I had one student in this class who has an IEP. He underwent some serious stresses at home this year due to a severe injury to a parent and his academic performance dropped off dramatically. He handed in virtually no work for quarters two and three. When the data from this student is removed, the numbers for missing and/or late assignments for environmental science change as reflected in column two* of Table 6.

Students in our school earn credit for courses by semester. Semester one encompasses quarter one and two while semester two encompasses quarter three and four. Mean grades for each semester for the three sample classes are reported in Table 7.

Table 5
Mean Grades, Semester 1 and 2, (N=31)

	Semester 1 Mean	Semester 2 Mean
Physics (7 seniors)	78%	84%
Environmental Science (9 juniors)	80%	75%

Physical Science (15 freshman)	89%	83%
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Despite the increase in missing and/or late assignments for my senior physics class for the 3rd quarter, this class did see a rise in mean grade for the 2nd semester. Again, I have no data to substantiate that this may be due to the guest speaking events. Like the trends shown in the data for missing and/or late assignments, the phenomena for the mean grade for seniors is a trend I have seen before. By the beginning of semester two, most seniors have been accepted to college (or conditionally accepted), and they are beginning to prepare their applications for scholarships. This is the time that many finally recognize that it may be wise to put in a little extra effort. I believe the data we see in Table 7 for my seniors reflects this effort. I also believe the decrease in mean grade for my juniors and freshmen is a direct result in the rise in missing and/or late assignments coupled with the stressors of the time of year as discussed previously.

General Analysis

After my experience with the first guest speaker, Ed Gerety, when I was not adequately prepared with any sort of pre-speaker preparations, I tried to be more diligent with pre-planning for the events that followed. It was most certainly a trial and error effort. When it was time to have the meteorologist in, I started several weeks in advance letting students know that he was coming for a visit. I prepped each class (environmental science and physical science) as we studied our atmosphere and weather units, by trying to impress upon them that they would gain more from the experience if they had good working knowledge of the basics of his topic before they heard him. Mean test scores for these units were 74.1% in environmental science (on par with other unit test scores) and 81.2% in physical science (slightly above other unit test scores). Due to weather events

and school cancellations, the speaking event had to be rescheduled three times. This made me question the wisdom of which is best, a speaker scheduled before, during, or after the event. I believe, now that I have analyzed the data and results show high correlation for student attention to content over presentation, it is safe to say that guest speakers both before or during a unit of study would be just as effective as waiting until students had completed their study of the content.

By the time of my last scheduled speaking event, I had become much better at pre/post speaker planning. I learned, for example, that preparation of a pre-speaker questionnaire for the electricity specialist seemed to help students focus better on key points of the presentation. By asking students ahead of time about career options in the field of electricity, they seemed much more attuned to this aspect of the presentation. In fact, at one point during the presentation, a student specifically asked, “If I wanted to come to work for your company, what would I do? What would I have to study in college?” This became a topic that we were able to talk about in greater detail in class after they had completed their post-speaker questionnaire. I also decided that frequent reference to key points of my guest speakers at any opportune moments in subsequent weeks would help prolong the impact of the speaker. For example, when we took up the topic of simple machines in physics class in the weeks following the electricity specialist’s presentation, we had a short discussion about the inventions that employ simple machines that have fostered the advancement of our use of electricity. This allowed me to bring up again the possible career paths that we had discussed within that field.

There were two points of interest that I made in my observations during these speaking events that are worth noting. First, I noted that student attention when the event involved large group presentation seemed less than that during small group presentation. For example, during the meteorologist's presentation, which was held in the auditorium with all science students of all grade levels present, I found that I needed to continually move about in order to signal students who were becoming "chatty" to quiet down. It was predominantly the freshmen that were the guilty parties, and my older students verbalized their frustration with them the next day. One of my seniors said, "I was so mad at the freshmen! I think I missed a lot of what he was saying because the girls in front of me were being so rude. It's a good thing you spoke to them because I was getting ready to say something myself." There were absolutely no problems with any age group during the various small group events. I think this provides strong support of the idea that both maturity of the audience at the time of a guest speaking event as well as the size of the group experiencing the event will impact student engagement.

Secondly, I noticed that, as the number of speakers increased, students seemed to become more in tune with what I hoped they would gain from these events. I am not sure if this was a good or bad thing to have happen. I believe it was important that students knew that I was doing a study, but I can't help thinking that this may have limited the amount of reliable data I was able to get. For example, by the time my colleague, Mr. Wierzbowski presented to my class, I had one student who actually asked if he was really there for them (the students) or if it was just a part of my study. I was alarmed that students may have felt like any of the speakers were just a part of a study rather than to offer support for their academics. Also, by the end of the study, and perhaps in light of

this comment by a student, I couldn't help feeling like students were just hurrying through the surveys or simply giving answers that they thought I wanted to hear. There is no direct evidence to support this theory, it is rather simply a feeling through observation during discussion and while students were completing their surveys.

Overall, the data seems to support the idea that guest speakers can and do impact student experience in the classroom. The data does not, however support that the impact will necessarily be toward higher academic performance or future career plans. However, the data does seem to support the idea that impact, whatever it may be, will be greatest if the event aligns with content being studied because students value good content above good presentation. Finally, in order to maximize the impact of a speaking event, the teacher must execute careful planning such that the event is delivered in the correct size and format to match the maturity level of the students participating.

INTERPRETATION AND CONCLUSION

As I look back at my original impetus for conducting this study, I am reminded that I was interested in what I, as a teacher, can do in my science classroom that might encourage students to strive to achieve at highest academic levels possible. Specifically, I wanted to determine if inviting guest speakers to share their experiences, could help students make connections between what goes on in the classroom and what will be expected of them in the real world. Prior research says that guest speakers help bridge this gap quite well, but that they should possess certain attributes and be implemented with careful planning. My study strived to find out what those attributes of a guest speaker might be from my students' perspectives.

When considering at what grade levels, 9th, 11th, or 12th, the impact might be greatest, my findings seem to support that impact by a speaker is determined by a combination of age at which a student experiences the event and what the content of the presentation is that makes the difference. For example, in the case of the motivational speaker, younger students were more receptive to the speaking event since the content was more relevant to what they were experiencing in life than older students were (70% of freshmen rating of nine or 10 and no seniors rating above eight). Likewise, when the content of the speaking event coincided with what students were studying, students of all ages valued it highly (84% recommended the meteorologist event to other students, 100% of students recommended the wildlife biologist, and 67% recommended the electricity specialist) despite how much they liked the speaker. This data tells me that impact by a guest speaker as it correlates to age is content driven.

This study, as it was conducted, did not reveal any impact by guest speakers on student's desire to achieve at higher levels. The number of missing and/or late assignments did not change (Table 6), and the mean grades did not significantly change either (Table 7). Any variations on these numbers can easily be attributed to other circumstances. I feel it is important to note that I believe this area could, and perhaps was, impacted by the guest speaking events, but my study did not sufficiently gather data that could support this theory one way or the other.

What attributes of a guest speaker increase student engagement? Predominantly, the findings show that, while students enjoy a guest speaker who is dynamic, injects humor, and incorporates the students into the presentation either by participation or by hands-on activities (96% of students rating motivational speaker above seven, citing humor as key while only 64% rated meteorologist above seven, citing presentation as boring), they will respond to the content presented equally as well even if the presentation contained less than those attributes, so long as they deem the content worthwhile. In fact, even when the presenter possessed all of these attributes, as with Mr. Wierzbowski (95% rating of presentation at seven or higher; only 63% rating information at seven or higher), if they don't deem the content particularly valuable, they will not respond well to the overall presentation.

General observations revealed that students were much more engaged with the guest speaker when the event was presented in the student's regular classroom to a small group rather than in large group in an alternative setting. When in large group, the teachers present needed to continually move about and monitor student attention, but when in small group, the speaker was able to hold attention without teacher support.

The findings of this study also support the idea that a teacher must take into consideration the age of the student both as it relates to the content of the speaking event and as it relates to possible future career goals. Older students, in this case the juniors and seniors, seemed already fairly set in their plans for their futures (only one student indicated change in consideration after wildlife speaker) and there was little influence in that area by any of the speakers. Younger students, however, evidenced impact to their views of possible career paths even when that wasn't necessarily the focus of the speaking event, such as with the electricity specialist (57% increase by freshmen in identification of careers in the field of electricity; 0% change of the same by seniors).

Overall, the evidence in this study supports the idea that a guest speaker in a classroom will have greatest impact if the content is both age appropriate and content specific to what is being studied. The impact of the speaking event seemed to mean more to them over a longer period of time, as with the motivational speaker, when the content more directly impacted what they were currently experiencing for life events; in this case the transition to high school. No matter the attributes of the speaker themselves, whether fun or boring, if the content was not good, the event was not worthwhile. Students, no matter their age, valued content over presentation.

VALUE

The greatest impact to my teaching as a result of this study is that I have learned to ask students what they are thinking in a more formal way. I have always prided myself for being what I thought was “in tune” with my students wants and needs, and I have conducted formal interviews with them before. But conducting written surveys in addition to general observation and conversation gave me much more information than I had ever experienced from students before. In addition, having student thoughts and ideas in writing gave me the ability to compare data and look for impacts and trends. For example, in the past, general observations may have enlightened me as to whether or not students generally seemed to like a presenter. However, having the written surveys enabled me to make the connection that, even when they didn’t seem to really be enjoying the speaker, they were still attentive to the content and, overall, valued the event. This has allowed me to connect this phenomenon to my own teaching. Perhaps on those days when I feel the day’s lesson was lost because the students seemed bored, there is hope after all, because I now understand that, while it is certainly desirable, students do not always need to be having the best time to appreciate the value of the content.

As a result of what I learned in this study, I will continue to implement guest speakers in my classroom. I will strive to invite those professionals who will bring presentations to my classroom that are content specific to what we are studying. While I have learned that my students value content over presentation, I will still try to invite speakers I know to be dynamic and who have presentations that incorporate hands-on activities or student participation. I want them to enjoy these events as much as possible.

Also, in order to continue the effort to exhort my students to value best academic performance and how that relates to their future career goals, I will try to bring in guest speakers who will include in their presentation a portion on careers options in their field more often for my younger students. They seemed to be influenced more greatly in the area of career goals than older students. I will also collaborate with our guidance department and our middle school teachers to host events for younger students where speakers directly address career goals. I believe this is especially important for our 8th grade students as they contemplate their course of study upon entering high school. I believe the best way to achieve greater impact by the speakers in these ways will be to utilize a pre-event guide which will be completed by me and the speaker well in advance of each event (see Appendix G). This guide will serve as written follow-up for conversations had at the time of scheduling the event.

Finally, I will continue to look for those factors that might have greater impact to student academic achievement. I am disappointed that, seemingly, the guest speaking events in my classroom did not achieve my goals with regard to academics. As stated previously, I am not sure that there was no impact; I simply do not have the data to prove or disprove the theory. One way to achieve this goal might be to utilize the experiences of past graduates by having them come in to my classroom to speak specifically about the importance of academic excellence. I recently had a conversation with a past graduate who said that she really struggled with the level of study necessary to be successful in her first year of college. She said that, while in high school, she could get by quite easily with only moderate effort in her studies. She was amazed at the difference required in college. A presentation by her, or students like her, at the beginning and again at the middle of the

school year might serve my students very well. After all, my study has shown that greatest impact to students by a speaker is due to content. If the content delivered by a speaker is specifically about the importance of academic excellence, perhaps the impact in this area will improve.

As I look forward to my future in education after having completed this action research project, I am encouraged that I have developed the skills necessary to tackle the multitude of questions that arise in any given classroom. When wondering what I can do, for example, to improve student attention, student grades, teacher/parent relationships, etc., I will have the ability to develop a study to research possible treatments, research any current and/or past studies with the same focus, design and implement treatments for the perceived problem, assess and analyze the results of those treatments, report out to others the results, and (hopefully) exact positive change for my students.

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APPENDICES

APPENDIX A

TABLE OF GUEST SPEAKERS

Appendix A

Table of Guest Speakers

Table 1
Guest Speaker List

SPEAKER	TOPIC	CLASS*		
		9th	11 th	12th
Richard Hoppe, Regional Wildlife Biologist Maine Department of Inland Fish & Wildlife	Introduction of the wild turkey to Aroostook County, Maine Objective: Enhance student knowledge of impact to existing populations when introducing new species.		X	
Nancy Chandler, Education Specialist, Maine Public Service	Operations of Aroostook County power supply company and hands on activities with electricity. Objective: Enhance student understanding of mechanics of domestic power supply and preparation for electricity competition.	X		X
Ted Shapiro, Meteorologist, WAGM TV, Presque Isle, ME	Weather terminology, prediction, and prediction without specialized tools. Objective: Enhance student understanding of the science involved in weather prediction.	X	X	X
Steve Wierzbowski, English Teacher, Ashland District School	The history of the writings of Benjamin Franklin Objective: Provide understanding of the contributions to society made by Benjamin Franklin beyond common knowledge of his work with electricity.	X		X
Ed Gerety, Motivational Speaker	“Making Your Mark” Objectives: Enhance student awareness of the power of respect, the impact of choices, and other issues facing today’s youth.			All Student Population

* 9th – Physical Science

11th – Environmental Science

12th – Physics

APPENDIX B

DATA COLLECTION MATRIX

Appendix B

Data Collection Matrix

TABLE 2
Data Collection Matrix

Sub- Question	Collection Method					
	Track timeliness of work	Quality Circles	Grades	Teacher Observations	Surveys	Interviews
1	X		X	X	X	X
2	X		X			
3		X		X	X	
4		X		X	X	X
5		X	X	X	X	X

Sub-questions:

1. What grade levels (9th, 11th, or 12th) show the greatest impact from visits to the classroom by guest speakers?
2. What is the impact to student motivation to achieve at higher levels after experiencing a guest speaker's presentation?
3. What attributes of a guest speaker increase student engagement?
4. What size/style of presentation by a guest speaker results in increased student engagement?
5. What pre-speaker/post-speaker practices by me can best prolong/promote the impact of a guest speaker?

APPENDIX C

SURVEY FOR GUEST SPEAKER, ED GERETY

Appendix C

Survey for Guest Speaker, Ed Gerety

Dear Students,

You recently had the opportunity to experience a guest speaker by the name of Ed Gerety. Would you please take a moment to answer the following questions about that presentation? Thank you.

Mrs. Ward

1. Which of Mrs. Ward's classes are you in?
 - Freshman Physical Science
 - Senior Physics
 - Junior Environmental Science

2. On a scale of 1-10, how much did you like the presentation by Mr. Gerrity? (1 is not at all, 10 is very much)

1 2 3 4 5 6 7 8 9 10

3. If you had a friend at another school that was going to have Mr. Gerrity as a speaker, would you recommend that they go?

Yes No

When the friend asks why you make this recommendation, what will you say?

4. What parts of the presentation did you find most valuable?

5. What parts of the presentation did you not find worthwhile?

Appendix C, continued

6. What was the main point of Mr. Gerrity's presentation?

APPENDIX D

TABLE OF STUDENT RESPONSES

Appendix D

Table of Student Responses

Table 3:

Student's Ideas About Main Point of Ed Gerety Presentation

Student Responses, Survey Question #6: What was the main point of Mr. Gerety's presentation?	# Of similar responses
Bullying is wrong.	9
Treat others well and be kind.	8
Make good decisions.	4
Respect yourself and others.	3
Tell people you love them.	2
Don't judge others.	2
General tips on life.	2
Be the best you can be.	1
Pursue your dreams.	1
Have good school spirit.	1
Speak your mind.	1

APPENDIX E

SURVEY FOR GUEST SPEAKER, METEOROLOGIST

Appendix E

Survey for Guest Speaker, Meteorologist

Dear Students,

You recently had the opportunity to experience a guest speaker who is a meteorologist. Would you please take a moment to answer the following questions about that presentation? Thank you.

Mrs. Ward

7. Which of Mrs. Ward's classes are you in?

- Freshman Physical Science
- Senior Physics
- Junior Environmental Science

8. On a scale of 1-10, how much did you like the presentation by? (1 is not at all, 10 is very much)

1 2 3 4 5 6 7 8 9 10

Why did you choose this ranking?

9. Please rank the value of the information given in the presentation:

1 2 3 4 5 6 7 8 9 10

Why did you choose this ranking?

10. If you had a friend at another school that was going to have the same speaker, would you recommend that they go?

Yes No

Appendix E, continued

When the friend asks why you make this recommendation, what will you say?

11. What parts of the presentation did you find most valuable? Why?

12. What parts of the presentation did you not find worthwhile? Why?

13. What was the main point of the presentation?

APPENDIX F

PRE/POST-VISIT QUESTIONNAIRE, ELECTRICITY SPECIALIST

Appendix F

Pre/Post-visit Questionnaire for Electricity Guest Speaker

1. What is the Name of the company that supplies power to your home?
2. Where does the electricity that this company supplies come from?
3. When your parents/guardian/landlord pays the electric bill, what is he/she paying for?
4. If you put up a wind tower at your residence, how will that help your electricity cost?
5. What types of jobs are available if you work for a power supply company?

APPENDIX G

GUIDE FOR GUEST SPEAKING EVENT

Guide for Guest Speaker in the Classroom of Shari F. Ward

Date: _____

Dear _____

Thank you for being willing to come to my classroom and speak with my students. Your expertise in your field and your desire to share with students is highly valued in our school community.

As per our phone conversation on _____, my students are/have been studying _____. Your presentation is scheduled for _____ at _____ in room _____. When you arrive, please enter at the main entrance and check in with the office for a visitors pass. They are expecting you, and will notify me so that I may come greet you. If you need assistance with moving any equipment, please let them know and arrangements will be made.

The following is a list of the specifics we discussed for your presentation:

- Your topic for this event will be _____
 You will include discussion for:
 General scientific information as per your expertise
 Education required for working in your field
 Career opportunities within you field
- You are encouraged to include active student involvement if possible.
- You will need me to provide the following equipment/supplies for your presentation:

- You are scheduled to arrive at our school at _____, on _____, and will have _____ minutes for your presentation.
- Other (lunch needs, stipend requirements, etc.)

If you have any concerns or I have omitted any of the details we discussed, please contact me as soon as possible at _____ so that I can make the necessary corrections. My students and I look forward to you coming and spending time with us.

Sincerely,

Shari F. Ward
Ashland District School