Disseminating Teaching Tips to Faculty: The Chalk Talk Email Column

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Abstract — *First year engineering students (FYES) receive a majority of their teaching from instructors outside of engineering, typically from chemistry, math and physics departments. As a result, these instructors are usually not a teaching "community" with a shared purpose and commitment to these students. Thus, addressing collective teaching quality among these instructors is difficult. It has been shown that retention of engineering students, particularly from freshman to sophomore year, is strongly tied to the quality of, and attitudes toward, teaching. As part of a project to improve the FYES learning environment and engineering student retention, methods were needed to build a community of reflective teaching practitioners among chemistry, math, physics and engineering instructors. This paper describes the development of a carefully crafted, electronically distributed advice column on teaching developed by an editorial team drawn from these departments, under the pseudonym Jonas Chalk (an amalgam of the editorial team). Surveys of Chalk Talk readers indicate that this is an effective and cost efficient means to effect teaching culture change among a diverse instructor population.*

Index Terms — *dissemination, freshman, faculty development , FYES, teaching .*

INTRODUCTION

First year engineering students (FYES) face a variety of challenges as they adapt to life as college students. Unlike freshmen in most other majors, they face the first year challenge that the majority of their coursework is outside of engineering, primarily in chemistry, math and physics. These courses provide the necessary knowledge base that every engineer needs, but are taught primarily by faculty outside of engineering. Thus, the "community" of instructors who teach these students at this initial, critical point in their engineering curriculum is typically drawn from different departments, each with its own level of emphasis on teaching (versus scholarship and research activities) as a component of its identity. The faculty from math and the sciences may view teaching engineering students as more of a service activity and feel that their teaching energies are better devoted to students in their own majors. In other words, the instructors of our FYES are too often not a "community" of instructors at all, lacking a shared sense of purpose, mission, and commitment to prepare engineering students for follow-on courses.

This issue of a shared teaching mission by instructors of FYES is important when one considers the number of engineering students who leave engineering after the freshman year. The well-known study by Seymour and Hewitt [1] examined concerns among two groups of undergraduate science, math and engineering students: those who change majors away from science, math and engineering ("switchers"), and those who remained to complete their respective degrees ("non-switchers"). Poor teaching by science, math and engineering faculty was cited as a concern by 93% of all students, including 98% of switchers, and 86% of non-switchers. Student "concerns about teaching, advising, assessment practices (grading), and curriculum design pervade" the study, which included students with math SAT scores of 650 or higher.

The College of Engineering at Northeastern University (NU) was faced with a number of significant obstacles in deciding how to devise ways to address communication and teaching among faculty teaching first year engineering students. Communication about teaching between the Colleges of Arts and Sciences and Engineering was limited, usually confined to deans or associate deans. Instructors' knowledge about learning theory and educational research was typically non-existent except for those instructors who had been involved in education grants.

As part of a project to address these issues to promote an improved learning environment for FYES at Northeastern University (NU), methods were needed to build a *community of reflective practitioners* [2, 3], i.e., teachers of FYES who discussed with each other, evolved and adapted their teaching strategies to meet the needs of this particular group of students. By creating both this community of practitioners, and a climate of change in teaching practices, we hoped to achieve improved retention among our FYES.

A significant constraint on the design of our method for promoting change was time and efficiency. We knew we had to develop an intervention that would meet the needs of as many instructors as possible on the continuum with relatively little cost on their part, and in a way that was not perceived as time intensive. A final constraint was the creation of a mechanism for Arts and Science instructors to interact with Engineering instructors regarding the different content needs of non-science majors.

The mechanism developed to achieve these objectives took the form of an advice column, much like "Dear Abby." An editorial team was formed consisting of faculty from chemistry, math, physics and engineering, directors of Northeastern University's Center for Effective University Teaching (CEUT), and an educational technology specialist. Critical topic areas around the issue of teaching freshmen engineering students were identified, and questions on those topics were formulated by the editorial team (as if "readers" had asked the questions). The experiences of the editorial team, as well as teaching and learning literature, were integrated to compose "responses" to these questions, written under the pen name of "*Jonas Chalk*". The development of the "*Chalk Talk*" column provided a means to form the teaching community and disseminate specialized teaching practices for a very particular population.

SOLUTIONS TO CREATE CHANGE

From these challenges emerged the idea for an electronic advice column, *Chalk Talk*. The editorial team consisted of an interdisciplinary group from engineering, math and the sciences and the Teaching and Educational Technology Centers. These individuals met to exchange ideas and talk about different discipline models of teaching and learning [4]. This created opportunities for significant reflection and dialogue on teaching among these constituents. Next, the group (using the pseyudonym *Jonas Chalk*) investigated and used the research on teaching and learning provided by the CEUT staff to inform the writing of the columns and combined this information with reflection and discussion on our own successful practices. The method of delivery was electronic via e-mail and web postings of columns, which remained available on the *Chalk Talk* website [5] for ease of faculty consultation.

Chalk Talk was launched as a teaching advice column on February 13, 2001 with the first column entitled "Lost Students," which addressed the issue of engineering students who were "lost" in their math and science classes because of varied high school preparation. From this beginning, the editorial team began producing a column every week for the first two academic years. A sample column is shown in Figure 1. These were sent to the freshmen instructor e-mail list, which included a total of 35 instructors in chemistry, engineering, math and physics. After the first two years of producing weekly columns, *Jonas* decided in Year 3 to run a new column every other week and reprint a relevant archived column on the alternate weeks. This was an effective strategy as the column continually attracted new readership in successive years. These republished columns had a two-fold effect: they allowed new readers to read those columns that the team felt were most relevant to recurring teaching challenges; and for existing subscribers, the archived columns provided reminders of good teaching practices.

It was challenging for the editorial team to "become Jonas," with a single coherent voice [6]. Each week, the team met to discuss possible column ideas. A primary draft writer was usually assigned to compose the initial "question" and response that would address the particular issue that had been agreed upon. This initial draft was then passed electronically from one team member to the next, with each member editing using the "tracking" function in MS Word. At the end of this process, the draft writer typically sorted through the changes, made final edits, and this final draft was discussed at the following week's meeting. The titles of the columns were designed to be interesting enough to attract the attention of the majority of faculty to open at least a few of them. Columns also addressed very common teaching areas strategically placed at appropriate times in the semester. For example, during mid-terms, *Jonas* would run a column on "Cheating on Tests" or "Devising Multiple Choice Exams." These were issues that even the most seasoned practitioners usually struggle with at some point in their own classrooms. Another feature that was added to *Chalk Talk* was a post-script that was called the "Quick Tip." The team wanted to provide a tool that an instructor could try immediately at his or her next class, or a reference (usually a website) that would provide further guidance on a topic.

This simple, elegant solution provided the means to address significant faculty development issues, while creating an interdisciplinary community of teachers with a common purpose developed through understanding the learning style and needs of each discipline. The creation of *Chalk Talk* provided a venue for regular, face-to-face communication among the chemistry, math, physics and engineering faculty, many of whom are involved in teaching FYES. The inclusion of staff from

the university's teaching and educational technology centers added further dimensions to the discussion and formulation of each column.

Dear Jonas,

Yesterday I gave my class a test. At the end of the period only about half the students had finished the exam. The students started getting very vocal, complaining about needing more time, asking whether they could do it over, claiming that the test wasn't fair, and so on. So I told them that for those who didn't finish, I would grade only the part they had completed. After class, the students who had finished the test came to me and were very angry. They said it wasn't fair: since they had finished the test, why should these other students have less work graded? Now I've got everybody in the class mad at me. What should I do?

Tested Out

Dear Tested Out,

First, think about what you might have done to avoid this. For example, did you try the test yourself to see how long it took you to do it? Even though you're an expert, you often get a feel for how much time it might actually take if you try to answer your own questions. It's always best to try any assignments yourself beforehand so that you have a better understanding of what's involved in doing the work. If you have a TA or grad student working for you, you could ask him or her to take the test and note how long it took; you can then adjust the questions accordingly. If this happens again, you can try a couple of strategies. You could tell students that you're going to grade the entire test, but because so many students had problems with it, you're willing to drop one grade this quarter (assuming that you are sure your future tests can be done in the allotted time). If you believe in extra credit, you could give students an opportunity to make up points. With this class, you're already in a bind. It's best to be frank with the group and tell them you were really surprised that they couldn't finish the test in time. You might also consider telling them that those who want the test to count should let you know, and for the others, you'll disregard the test grade in the final grade calculations. You should then set the policy clearly with the class for future tests. They'll appreciate that you've heard their concerns and are planning to address them in the future. Jonas

Quick Tip: To approximate whether an allotted exam time will be adequate for students, determine the time it takes you to complete the exam and multiply by three.

FIGURE 1
SAMPLE CHALK TALK COLUMN ENTITLED "UNFAIR TESTING"

Problems that arose with FYES teaching or other instructor-student interactions were often resolved using the editorial team as a sort of mediation group. Discussions during meetings allowed administrative issues to be addressed in a collaborative setting to bring about institutional change. For example, during a review of a column on final exams, it became clear that the exam schedule did not work for either Arts and Science faculty or Engineering faculty. This discussion of the column allowed the scheduling issue to surface, and on-going discussions created a compromise solution that was presented to the registrar and easily adopted and implemented the following semester.

IMPACT OF CHALK TALK COLUMNS

After running weekly columns for five academic quarters, we surveyed our targeted readership of faculty, instructors, and teaching assistants from Engineering and Arts and Sciences. The survey was intended to find out how many of our e-mail list recipients were aware of *Chalk Talk* and, more importantly, how many of those were actually reading the column. The survey also asked about the usefulness of *Jonas* for changing classroom practices and getting pre-contemplative faculty to think about changing their practice – the first crucial step in the change continuum. Surveys were sent on-line as part of the *Chalk Talk* column, and paper versions were handed out at a luncheon for engineering, math and science instructors who teach FYES. Our survey generated a 50% return rate from all the disciplines involved in the project, and respondents ranged from lecturers and teaching assistants with only limited classroom time to full professors with over 20 years of teaching experience.

Of the respondents, 96% were familiar with the column, 92% had actually visited the *Chalk Talk* web site and found *Jonas* helpful, while 59% had spoken to another colleague about their teaching because of a *Chalk Talk* column. Perhaps the most impressive survey result was that 92% of survey takers had thought about their teaching practices and tried at least one new idea. In the portion of the survey where respondents could write comments, it was clear that *Jonas* had prompted many instructors to reflect on their teaching methods. For example:

- "(*Jonas*) helped me recognize some of the philosophies I hold and the techniques I use."
- *Jonas* "helped me think about things" and "caused me to consider how I do things and possible techniques I can try."
- "(the columns) cause one to reflect on one's own teaching and what one could do better to improve teaching, how to interact better with students and how to be more effective as a communicator and teacher."

There was further on-campus anecdotal evidence that *Jonas* was gaining some notoriety among the target audience. Teaching practitioners started to ask who *Jonas Chalk* is (when, in fact, "he" is really a product of 8 to 10 editorial team members). There were also unsolicited responses to columns from the readership, including: comments on points of debate in the columns; suggestions about how to address a particular issue; and recommendations for future columns (which were welcome inputs to an editorial team that occasionally struggled with column topics).

As word of the column spread, we have added faculty from five different colleges to our *Chalk Talk* e-mail list, which now totals 130 subscribers. The Bouvé College of Applied Health Sciences at our university, faced with similar issues teaching their first-year students, was so impressed with our results that the *Chalk Talk* column is now sent to their faculty.

Chalk Talk also started to gain exposure on other campuses as the editorial team spoke about this dissemination technique at conferences and workshops. The column received a national award in 2001 [7], was highlighted in the Teaching Professor list serve [8], and was added to a number of other universities' teaching publications or electronic newsletters from universities as diverse as the University of Maryland and the University of Australia to Tompkins Cortland Community College in Dryden, New York. Archived columns are available for perusal [5,6].

CONCLUSIONS

This paper has described an electronic dissemination tool for improving teaching practices for instructors of first-year engineering students (FYES). The tool took the form of an "advice column" for instructors, and each column provides carefully crafted guidance on a particular teaching issue, written by an editorial team of 8 to 10 faculty and staff from chemistry, engineering, math, physics, the university teaching center and educational technology. The columns were distributed via e-mail to instructors in engineering and relevant Arts and Sciences departments. The goal was to build a community of reflective practitioners and effect teaching culture change. The number of faculty enrolled in the e-mail list has increased from 35 at the column's inception to 130 in 2004. In a survey of target instructors, 96% were familiar with the column and 92% had thought about their teaching practices and tried at least one new idea. The column has expanded its distribution to a number of other universities.

While *Jonas* many not have opened the classroom door, i.e., made teaching practices transparent to all [9], the *Chalk Talk* column has created an electronic teaching community among disparate disciplines. It has provided an inspiration to act and reflect on teaching practices, and serves as a forum for discussion.

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