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## Acoustic tweets and blogs: Using social media in an undergraduate acoustics course

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## 164th Meeting of the Acoustical Society of America

Kansas City, Missouri

22 - 26 October 2012

### Session 2aED: Education in Acoustics

#### **2aED5. Acoustic tweets and blogs: Using social media in an undergraduate acoustics course**

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Each fall, the author teaches an undergraduate architectural acoustics course to around 40 third-year architectural engineering students at the University of Nebraska. Beginning in 2011, a social media component was introduced to explore the use of this technology and how it may supplement the students' learning experience. Students were given an opportunity to receive extra credit by using Twitter and/or blogging about course material using a set hashtag (#AE3300) or through the course website. Results were positive, and the author will discuss pros and cons that she has experienced in adding this social media component. Suggestions for future implementations and examples of student participation will be presented.

Published by the Acoustical Society of America through the American Institute of Physics

Included in this paper are slides that were presented for this talk in Kansas City on October 23, 2012.



## Acoustic Tweets and Blogs: Using Social Media in an Undergraduate Acoustics Course


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This paper discusses how I have integrated the use of some types of social media into an undergraduate acoustics course, but first let us begin by defining ‘social media’. Wikipedia states that social media are “interactive platforms via which individuals and communities create and share user-generated content” (Wikipedia 2012). The keywords in my opinion are ‘interactive’ and ‘user-generated content’. Personally I have had (and may even honestly still have) an aversion to using social media, such as Facebook, Twitter, blogs, etc. I have not been convinced that it is appropriate for friends or acquaintances to respond (‘interactively’) to what I am doing or thinking at all times of the day (i.e. my ‘user-generated content’).



## The Backstory

- Social media = “**interactive** platforms via which individuals and communities create and share **user-generated content**” (Wikipedia)
- I had (have?) a **personal aversion** to using social media (Facebook, Twitter, blogs, etc.)



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However, I participated in two mind-altering workshops in 2011. The first was sponsored by the National Science Foundation, entitled “Science: Becoming the Messenger”. This day-long workshop brought into focus for me the utility of using social media to broadcast research results, to inform a broader audience about the impact of the scientific work that we conduct. Subsequently, I did start a blog for our Nebraska Acoustics Group (<http://www.nebraskaacousticsgroup.org>), and I created a handle in Twitter for our group as well (@NEAcoustics). I began to regularly post information about our research group to the blog, and I linked it to the Twitter account so that each time a blog was posted, a Twitter feed went out as well.

The second one was the annual Graduate Teaching Assistant Workshop at the University of Nebraska – Lincoln, featuring Dr. Susan Ambrose as the keynote speaker. Dr. Ambrose is the co-author of a book “How Learning Works: 7 Research-Based Principles for Smart Teaching” (2010), and I highly recommend that all educators purchase and review this book!



## The Backstory

Two mind-altering workshops

- NSF “Science: Becoming the Messenger” (March 2011)
  - Utility of social media in broadcasting research results
  - <http://www.nebraskaacousticsgroup.org>
  - @NEAcoustics on Twitter
- UNL Teaching Workshop, featuring Dr. Susan Ambrose (Aug. 2011)
  - *How Learning Works: 7 Research-Based Principles for Smart Teaching* (2010)


During the workshop, Dr. Ambrose highlighted the 7 principles discussed in this book, and one that struck me in particular was the following: “Students’ motivation generates, directs, and sustains what they do to learn”. Dr. Ambrose discussed that as educators, we should strive to establish the value of the material covered in our classes. In a brainstorming session, I began to flesh out an idea of how students in my 3<sup>rd</sup> year Architectural Engineering course AE 3300 “Building Acoustics Fundamentals” (taught every fall semester to approximately 40 students) could themselves establish the value of the course material, by interacting with each other through their own user-generated content, specifically on the course topic. How could I encourage them to share experiences, about how acoustics in buildings impacts their daily life? Social media seemed like a good fit.



## One of the Principles

- “Students’ **motivation** generates, directs, and sustains what they do to learn.”
  - Need to **establish value** of material
- Led to idea: have AE3300 “Building Acoustics Fundamentals” students (3<sup>rd</sup> year) share experiences
  - How do acoustics in buildings impact your daily life?



As a first attempt in fall 2011, I created an assignment for AE 3300 in which the students could tweet or blog about building acoustics for extra credit in the class. To make it worth their while, I decided to grant them up to +2 points on their overall course grade. This can be significant, since it can change a student’s letter grade from one category (e.g. 89%=B+) to the next (91%=A-). Because tweets are short, these were credited with +0.1 points each, as long as the students used the hashtag #AE3300 and tweeted about an appropriate topic to the course. Since not all students have a Twitter account, there was an alternative option where students could submit blogs to the course webpage (run under Blackboard at the University of Nebraska). Because blogs are not limited in terms of number of characters (and because I hoped that students would write more in a blog), they were credited as +0.25 points each. Two blog folders were created within the Blackboard course webpage: one on ‘Acoustic Listening Journals’ for students to discuss their listening experiences at assorted performing arts facilities, and the other on ‘Acoustics Hot Topics’ for students to share recent news about acoustics found on-line or elsewhere.

At the beginning of class every week or so, I would review either the Twitter feed and/or the blogs and discuss them briefly for about 5-10 minutes. I would remind the students about this extra credit opportunity at almost every class, and encourage them to follow the feed/blogs on their own.



## Extra Credit Assignment

- Tweet or blog for extra credit!
  - Up to +2 points on overall course grade
  - Tweets (using hashtag #AE3300) = +0.1 pts
  - Blogs (on course webpage) = +0.25 pts
    1. Acoustic Listening Journals
    2. Acoustic Hot Topics
  
- Reviewed in class ~weekly
  - Beginning of class (5 minutes)
  - Pull up Twitter and/or blogs



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At this point I can only provide qualitative discussions of the outcomes I've experienced over one full semester (Fall 2011) and a half semester currently (Fall 2012), but I have been very pleased with this endeavor. I believe that this use of social media in class has enhanced student learning by highlighting the value of the course material. I don't know that I can ever provide statistically significant analyses of the effects based on grades, but it is apparent in the mood of the students. They do seem to be more engaged with the material, because they are thinking about it outside of class in their daily experiences. By reviewing their posts in class, they see how other students in the course are internalizing the course material and learn from the applications that other students have shared.

I also believe I've received valuable feedback on how students are understanding the course material, because every now and then, a post indicates how a student does not correctly apply a concept that we've covered. And having this social media channel allows the students an outlet for their thoughts. Class is not simply a one-way conversation (teacher to students), but now students are voicing their own thoughts on the course material, and those thoughts are available to me and to other students.

Another perk that I have enjoyed from this effort is that there are many more persons keeping an eye out for acoustic hot topics. I certainly cannot spend more of my personal time surfing the web to find cool acoustics stuff, but now a large number students are doing so as well, so I learn about links and resources that I didn't know about previously!



## Outcomes

- Enhancement of student learning by highlighting value of course material
  - ? ... Statistical effect on grades?
- Engaged students, learning from each other



- Additional feedback about student understanding of course material
- Multiple eyes on the lookout for hot topics

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Included here are some sample tweets from the class, regarding acoustic fundamentals, practical applications, other finds related to acoustics, and Husker football (because we are at the University of Nebraska, after all).

### Acoustic Fundamentals

**Sara Robbins** <sup>1</sup>@sararobbins5

The bass is making my chest vibrate. Looks like there are some massive wavelengths being created. #ae3300 <http://instagr.am/p/PBHIBeE46P/>

**tyler jorgensen** <sup>1</sup>@tylerjorgensen1

Just quoted an spl of 118.9 dB in the anarbor however they didn't get a ref level so who's to say #AE3300

**Lucas Harbison** <sup>1</sup>@LucasHarbison

I had a dream last night that my teacher made me derive the wave equation... It was more like a nightmare! #AE3300

**Ben Kaipust** <sup>1</sup>@bkaipust

Glad I had my ear plugs this morning when the fire alarm went off #AE3300 <http://pic.twitter.com/VHKNDpMG>

### Practical Applications

**tyler jorgensen** <sup>1</sup>@tylerjorgensen1

Watching the new transformers and the sub really excited the room nodes (2,1,0) #AE3300



**Andrew Reinke** <sup>†</sup>@Reinke2112

Buffalo Wild Wings... An acoustical nightmare! Open ceiling with no acoustical tiles, sports tv shows, and loud people. [#AE3300](#)

**Clete DeWispelare** @cdewispelare

First Mass at St. Cecilia's Cathedral...all I can say is EPIC! RT in that place seemed to be around 4 seconds. Awesome echoes tho! [#AE3300](#)

**David Mortensen** @dmortensen09

Now that I know about RT, I wish my guitar amp reverb had more qualitative numbers rather than 1-10. What's a reverb of 3? [#AE3300](#)

**Rose Quail** <sup>†</sup>@RoseQuail

Love when it's the end of the work day and the acoustical background noise from the lighting can be turned off. [#AE3300](#)

**Michael Zelensky** <sup>†</sup>@MikeZelensky

I wonder what frequency the walls in my room experience a coincidence dip. [#AE3300](#)

**Kile Donley** <sup>†</sup>@KileDonley

Can hear my roommates talking clear as day while trying to study. The door is definitely the weakest link in my room. [#ae3300](#)

**Brent Kraay** <sup>†</sup>@Kraayfish

The noise in structures class is unbelievable. Ironically, it's low frequency noise transmitted through the structure. [AE3300](#)

### Other Finds

**William Schmit** <sup>†</sup>@Byl6

Omaha passes new city noise ordinance [#ae3300](#)

**Adam Steinbach** <sup>†</sup>@astein\_UNOaemaj

Fractal non-linear resonance and sonic manipulation on Ancient Aliens....interesting [#AE3300](#)

**Wyatt Suddarth** <sup>†</sup>@SuddarthVader

[youtube.com/watch?v=qIBsoe...](https://www.youtube.com/watch?v=qIBsoe...) [@LilyMWang](#) Cool application of material learned in class on Wednesday! [#AE3300](#)



**Brendan Walsh** @BMWalsh10

cool new application of acoustic technology. <http://www.eng.wayne.edu/page.php?id=1751> #AE3300

### Husker Football

**Wyatt Suddarth** @SuddarthVader

The 45 year old (white) gangsta man's whistle at the Husker game had to be near the threshold of pain. His outfit was painful too. #AE3300

**Linsey** @LinseyAnn02

I don't even need to watch the husker game to know what's going on, the guys that are screaming from down the hall, say it all. #AE3300 #GBR

**Andrew Reinke** @Reinke2112

Wisconsin QB Joel Stave said "that is the loudest crowd I have ever played in front of." #AE3300 #Huskies #GBR #BoKnows

Here are some sample blog entries, taken from the course webpage.

#### [More Info on Reducing Aircraft Sonic Boom](#)

*Posted by Caitlin Anderson at Monday, September 10, 2012 9:19:58 PM CDT*

After discussing the fact that NASA is trying to reduce the sonic boom and create aircraft that can move at sonic speeds without carrying the loud noise with it made me want to look into it a little further. I had a few questions such as what kind of reshaping would be done to the aircraft and how it would specifically reduce the volume. I learned that what causes the loud noise is several sonic shocks that occur at all parts of the aircraft, such as the nose, wings, rear, ect. The new shape of the aircraft will separate the sonic shocks so they do not combine to make one large boom. The information is very interesting and there are even a couple pictures of the prototypes of the aircraft they are trying to build. The following link holds some initial information and also a question and answer board where Ed Haering, who is a sonic boom researcher, gives explanations to those who wrote in their questions.

[http://www.nasa.gov/connect/chat/sonic\\_boom\\_chat.html](http://www.nasa.gov/connect/chat/sonic_boom_chat.html)

#### [Found this while surfing the web](#)

*Posted by Meagan Kurlmel at Saturday, September 29, 2012 8:14:55 PM CDT*

Basically this is all about the low frequency noise and infrashound that we were talking about on Friday, and it goes into the detail of what it is and how it is associated with wind turbine noise. Extremely interesting!

[http://www.ene.gov.on.ca/stdprodconsume/groups/lr/@ene/@resources/documents/resource/stdprod\\_092086.pdf](http://www.ene.gov.on.ca/stdprodconsume/groups/lr/@ene/@resources/documents/resource/stdprod_092086.pdf)

### Is it more natural to think in a logarithmic scale?


*Posted by Seth Nelsen at Sunday, October 7, 2012 11:07:20 AM CDT*

I found an article suggesting that a logarithmic scale may be more intuitive than a linear scale, not just for sound but for memory and possibly other systems as well.

<http://web.mit.edu/newsoffice/2012/thinking-logarithmically-1005.html>

To see the current Twitter feed for this class, log in to Twitter at <https://twitter.com>, then search for the hashtag “#AE3300”. That typically pulls up a list of the ‘top’ tweets for this category; then click on ‘all’ to be able to view all tweets that have been submitted with this hashtag.

To see the blogs for this class, please contact me and I will be happy to give you permission to view the class webpage at <https://blackboard.unomaha.edu> as an ‘observer’.



### Current Twitter Feed + Blogs

- <https://twitter.com/>
  - Search **#ae3300** or **ae3300**
  - View 'All'
- <https://blackboard.unomaha.edu/>

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Next I'd like to share a few notes with regards to implementation. First is that I feel compelled to check the Twitter feed every week, because only the tweets from the past week will appear when searching for tweets under a hashtag. Consequently, during the course, I regularly check Twitter and update the students' tweet/blog scores on the Blackboard gradebook every week, which takes approximately 10 minutes.

As mentioned earlier, since some students do not wish to have or use Twitter, the extra credit assignment does offer blogging to the course Blackboard webpage as an alternative. On the first homework assignment of the semester, I require all students in the course to submit a blog to the course webpage. Thus, I am assured that they all know where to submit such blogs, and that they all know how to do it.

I've also found that some Twitter users prefer to have 'private' Twitter accounts that are not open and available to the general public. In that case, their tweets will not appear on the Twitter search under a hashtag. My procedure has been to individually 'friend' them, review all of their

tweets through viewing their personal account, and then ‘favorite’ the ones they mean for class (with the #ae3300 hashtag) so that I can easily pull up their tweets from my Twitter page when I review them in class.




## Notes on Implementation

- **Must check Twitter every week**
  - When searching under a hashtag ... tweets only remain for one week!
  - Must check every week + update tweet/blog score on Blackboard gradebook (~10 minutes)
- **Some students don't use Twitter**
  - Blogging offered as alternative
  - HW#1 requires all students submit blog
- **Private Twitter accounts**
  - Have to 'friend' them, review separately, and favorite their tweets

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Some other issues that I'm still working through are whether or not tweets in class should be permitted. I do not have a statement in my syllabus, indicating that students should not use smartphones/laptops/etc. during class. So I do sometimes have students who will tweet in class, about class material. For now, I think this is a positive occurrence. For example, during Prof. Michael Vorländer's recent guest lecture, a student tweeted "Excellent death star reference", when Prof. Vorländer referred to a spherical arrangement of loudspeakers as looking like the death star in Star Wars.

The other worry is if tweets contain inappropriate or wrong content. Up to now, that has not been a major concern, but I cannot delete such tweets, if this ever did come up in a significant way. One example is a tweet in which students revealed that they found a youtube video of my colleague singing in his bathroom. It's rather embarrassing – but good for all of us educators to know that the students are probably searching for random on-line things about us!



## Notes on Implementation

- Tweets in class permitted...

Meagan Kurlmel [@MeaganKumel](#)  
Excellent death star reference Prof. Vorländer [#AE3300](#)

- Worries about inappropriate or wrong content...


Linsey [@LinseyAnn02](#)  
Dr Guo taking advantage of the acoustics in his bathroom! [#Youtube](#)  
[#AE3300](#)

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I typically allow students to submit tweets/blogs for extra credit up until the last day of final exams at 5 PM. I do find that some students will submit a rash of tweets/blogs during those last few days. These are really not helpful to the class, since I'm not able to review them with the entire class. Next year, I am considering setting the due date to be the last day of class instead.

In Fall 2011, 64% of the students in my class participated, submitting 241 tweets and 41 blog entries. 20% of the students in the class received the full +2 extra credit points.

And a final note ... it may be that a better hashtag should be selected. Every now and then, my Twitter search will pull up tweets on the Audio-Technica AE3300 cardioid condenser handheld microphone!




## Notes on Implementation

- Rash of tweets/blogs at end of semester
- Fall 2011 participation = 64%
  - 241 tweets, 41 blog entries
  - 20% received full +2 extra credit points
- Better hashtag selection?
  - We find tweets on Audio-Technica **AE3300** Cardioid Condenser Handheld Microphone


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In general, I have been very pleased with this foray into using social media in my undergraduate acoustics course. I find that even after one year, some of last year's students continue to tweet to #AE3300 about assorted acoustics topics. Plus, sometimes friends of the students in class become aware of what's happening, and will tweet to our hashtag as well.




## First UNL, Next the World...

- Growing community 😊
  - Last year's students continue to tweet to #AE3300

Josh Thede  @JoshThede

"@TinnitusWars: Hearing Linked to Heart Health <http://fb.me/z1n71Pyq>"  
#ae3300


- Other friends/persons tweeting as well!

David Lang  @D\_Lang24

@LinseyAnn02 and @SuddarthVader ... It's 2 am and I can hear the guy living a floor up taking a piss #AE3300


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If other instructors are interested in trying a similar approach for their classes and making this a multi-institutional endeavor, I would be happy to discuss such options. We could select another hashtag, such as #AcousticsRocks ?



## Summary and Future Ideas

- Social media has been used positively in an undergraduate acoustics class
  - Enhances student learning
  - Provides valuable feedback to instructor
- Multi-institutional endeavor?
  - We could all share another hashtag... e.g. #AcousticsRocks

David Mortensen  @dmortensen09

The difference between HS and college: tweeting in class in HS = detention. tweeting in class in college = EXTRA CREDIT!! #AE3300

If there are any further comments or questions on the material covered in this paper, please do feel free to contact me.



Thank you!

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@NEAcoustics

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