

# Using Twitter to Enhance Communication and Engagement in Large Enrolment Classes

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# Outline

- Motivation
- What is Twitter?
- What Twitter Isn't...
- Usage and Examples
- Future Directions



# October 2009...

- A sudden onset of H1N1 flu at 10 PM one Tuesday required quick contact with the 250 1st year Chemistry students expecting me at 830 the next morning...
- Went to ACE, loaded the mailer and sent out a blast email to the class, then back to bed...
- The next morning, 35% of the emails had bounced back – they're not on email!
- So where are they? And how can I reach them?



Look around any university class and  
note what all the students have...



a cell phone

Photo courtesy of velkr0/Flickr Creative Commons



# Connecting to Students' Phones

- They have phones for texting, not for calling
- Unlimited texting plans very common and cheap
- Many student phones are not data-capable (too expensive)
- Reach them by SMS?
- SMS gateways are expensive to set up
- **Twitter** provides a free SMS gateway, as well as web/data/computer interface



# What is **twitter** ?

• An information network

(from [twitter.com/about](https://twitter.com/about))

Twitter is a real-time information network that connects you to the latest stories, ideas, opinions and news about what you find interesting. Simply find the accounts you find most compelling and follow the conversations.

At the heart of Twitter are small bursts of information called Tweets. Each Tweet is 140 characters long, but don't let the small size fool you—you can discover a lot in a little space. You can see photos, videos and conversations directly in Tweets to get the whole story at a glance, and all in one place.

Twitter for SMS is an instant infrastructure for mobile communications. Individuals, businesses and social causes can use Twitter for SMS ... to connect directly to anyone with a mobile phone.



# What **twitter** isn't...

- FACEBOOK – Twitter is not a social network (although it can be used that way). Since I only ask my students to follow the course twitter stream, and I don't follow them, I'm not part of their other interactions on twitter, and don't want to be!
- Email – it's not private, but in fact very public, a point I emphasize to my students! It's great for discussion, even for spectators, but not for counselling/advising. Email, or even face-to-face meetings, are best for those interactions.
- Limited by the 140 character limit in its application to higher education – far from it!



# Following and Followers



**Follow @uwchem254**

- Twitter is based on “following” and “followers” - to receive the course messages (“tweets”), the students must follow it - a simple click on a web link has them on the course list, as a “follower”. Now any update I send out, they will automatically receive!
- I ask my students to follow the course twitter stream, but I DON'T FOLLOW THEM! They can still contact me through “mentions” or “replies” - tweets directed at the course twitter stream by starting their tweet with, e.g., @uwchem254 for my second-year chemistry course.



# Following and Followers





**Follow @uwchem254**

- I have a personal Twitter account, that I use to follow the courses but don't share with students - a convenient way to check that what you're sending is getting out to your classes.
- All tweets are publicly available on the course twitter timeline - all students can follow the conversation, just like a class discussion!
- Twitter has their own free SMS gateway - students with unlimited incoming messaging plans can have all twitter updates "texted" to their phones (dumb or smart) even if they don't want to use it to send tweets.



# A sample exchange

 [Redacted] 7 Apr  
@uwchem254 for P6.4 part b, why is it wrong to use deltaH of products - delta H of reactants to get delta H of reaction at 298K?

 uwchem254 @uwchem254  
@ [Redacted] its not wrong, it is just that you are asked to get it from only the info given in the problem.  
[Hide conversation](#)

11:32 AM - 7 Apr 12 via Twitter for BlackBerry® · Details  
[Reply](#) [Delete](#) [Favorite](#)

 [Redacted] 7 Apr  
@uwchem254 So i could use either the values at 600 or 900 and then just use 298K for T2?

 uwchem254 @uwchem254  
@ [Redacted] no - you need to use those T's for Delta G - but Delta H you get will be independent of T.  
[Hide conversation](#)

11:46 AM - 7 Apr 12 via Twitter for BlackBerry® · Details  
[Reply](#) [Delete](#) [Favorite](#)

 [Redacted] 7 Apr  
@uwchem254 How can I do that? I have the Kp from both 600K and 900K but I'm not sure how to use them since "deltaHR is independent of T".

 uwchem254 @uwchem254  
@ [Redacted] can you get Delta G from Kp? Then can you use Gibbs Heimholtz to get Delta H?  
[Hide conversation](#)

11:39 AM - 7 Apr 12 via Twitter for BlackBerry® · Details  
[Reply](#) [Delete](#) [Favorite](#)

 [Redacted] 7 Apr  
@uwchem254 I just don't get what value of Kp to plug in to get delta G...


 uwchem254 @uwchem254  
@ [Redacted] you need both!  
[Hide conversation](#)


11:56 AM - 7 Apr 12 via Twitter for BlackBerry® · Details  
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 [Redacted] 7 Apr  
@uwchem254 But what temperatures should i use for T1 and T2? I have Kp both at 600 and 900 and they want the answer at 298K.

 uwchem254 @uwchem254  
@ [Redacted] but Delta H is independent of T so does it matter?  
[Hide conversation](#)

11:43 AM - 7 Apr 12 via Twitter for BlackBerry® · Details  
[Reply](#) [Delete](#) [Favorite](#)

 [Redacted] 7 Apr  
@uwchem254 Oh! Stick the equation for Kp into the Gibbs helmholtz in place of G for T1 and T2? Like T1 is 600 and T2 is 900?

 uwchem254 @uwchem254  
@ [Redacted] yes.  
[Hide conversation](#)

12:07 PM - 7 Apr 12 via Twitter for BlackBerry® · Details  
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Feedback when the student is immersed in the problem



# Tweets can include links and pictures taken from their phones!


[@uwchem254](#) This is my work for part (a).  
[pic.twitter.com/ekDZuZpd](http://pic.twitter.com/ekDZuZpd)

4. (20 marks) Consider the equilibrium  $\text{CO(g)} + \text{H}_2\text{O(g)} \rightleftharpoons \text{CO}_2\text{(g)} + \text{H}_2\text{(g)}$ . At 1000. K, the composition of the reaction mixture (in mol%) at equilibrium is: 27.1%  $\text{CO}_2$ , 27.1%  $\text{H}_2$ , 22.9%  $\text{CO}$ , 22.9%  $\text{H}_2\text{O}$ .




a. Calculate  $K_P$  and  $\Delta G^\circ_R$  at 1000. K.  
b. Given the standard enthalpies of formation,  $\text{CO}_2$  -393.5 kJ/mol,  $\text{H}_2\text{O}$  -241.8 kJ/mol and  $\text{CO}$  -110.5 kJ/mol, determine  $\Delta G^\circ_R$  at 298.15 K. Assume  $\Delta H^\circ_R$  is independent of temperature. What is  $K_P$  at 298.15 K?  
c. Which of these two equilibria do you expect to be least affected by the non-ideal behaviour of real gases?

(c)  $K_P = \frac{\left(\frac{p_{\text{prod}}}{p^\circ}\right)^{n_{\text{prod}}}}{\left(\frac{p_{\text{react}}}{p^\circ}\right)^{n_{\text{react}}}} = \frac{\left(\frac{0.542}{1}\right)^2}{\left(\frac{0.458}{1}\right)^2} = 1.40 \text{ at } 1000 \text{ K}$

$\ln K_P = -\frac{\Delta G^\circ_R}{RT} \Rightarrow \Delta G^\circ_R = -RT \ln K_P = -(8.314)(1000) \ln(1.40) = -2.80 \text{ kJ}$

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10:21 PM - 17 Mar 12 via web · Embed this Tweet

 Reply  Retweet  Favorite

A "retweet" allows me to send a particularly important question or comment to all the students in the course, followed by my response



# Twitter uptake from students – a quick evolution

- First used in Fall 2010 for Chem 120 – 280 students in total.
  - Within first two weeks of class, 60% of class was following – 75% within 4 weeks
  - Several “conscientious objectors” declined, but later joined once they realized it wasn’t Facebook
- Fall 2011 – two sections of Chem 120, 500 students in total
  - 400 followers within two weeks! Much more amenable to Twitter – most already there! No objectors either.
- Winter 2012 – Second year course, varied student years in 160 students – senior students discovering and using Twitter.



# What works, what doesn't

- Regular updates and responses are essential to having students "buy in" to Twitter - if you don't use it, they won't!
- Ask your students for their twitter names through, e.g., LEARN - allows you to "screen" your followers, and connect "screen names" to actual people.
- Compared to discussion groups, I find Twitter far more flexible and immediate - no need to log into a website, info is pushed directly to followers, and a chronology of the public timeline is always available.
- Some infrequent episodes of spam, but Twitter is very quick to respond to reports of spam and shut them down.



# What works, what doesn't

- In Fall 2010, I used twtpoll to run participation questions for the course, as it was free and easy to set up.
- In Fall 2011, I switched to directing students to our ACE (now LEARN) sites, as they offer better user tracking; also, twitter polling sites are no longer free for the volumes of responses my courses now generate.



# Future Directions

- Mary Power has generated a LEARN widget that allows a Twitter timeline to appear directly on a course's LEARN homepage - will be an addition to all my future courses.
- Twitter integration on LEARN (e.g., tweeting news and links to material from directly within LEARN) would be fantastic! Better than an email client...
- A Twitter "aggregator" of responses would allow us to replace iClickers with Twitter responses, which could be used inside and outside of class!



# Questions?

👁 Follow me!



**Follow @powrtryp**