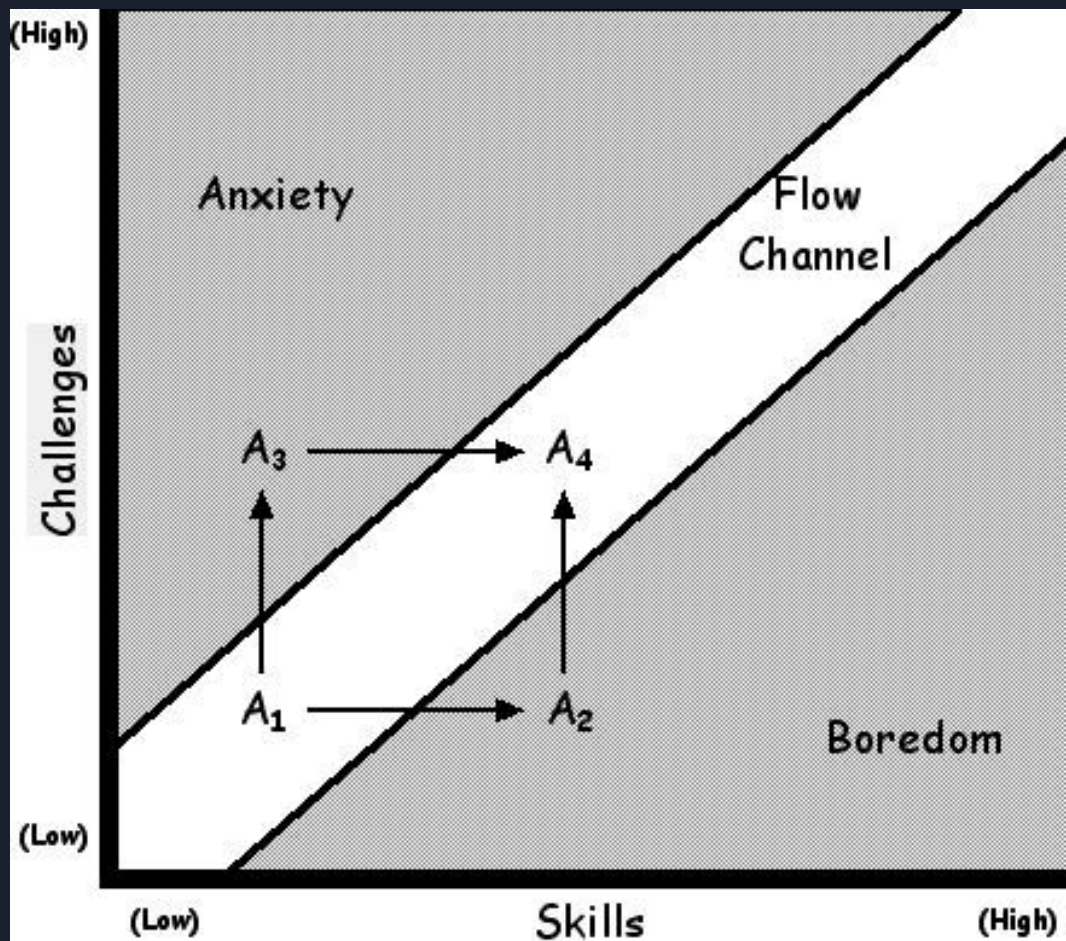





# Supporting STEM in Science with Breakout Boxes

STEM TECH Conference (2018)  
March 23, 2018

Brian Maccarelli, K-12 Science Specialist, Buncombe County Schools  
[brian.maccarelli@bcsemail.org](mailto:brian.maccarelli@bcsemail.org)




From Flow: The Psychology of Optimal Experience  
by Mihaly Csikszentmihalyi (page 74)



I can identify ways to incorporate breakout boxes into my Science class as a way to support STEM practices and skills.



**OBJECTIVE**

- 
1. Chemistry gone Viral breakout game
  2. Debrief of game
  3. Why breakout boxes?
  4. Resources for using breakout boxes in your classroom



**AGENDA**



# Chemistry gone Viral

It's really just a case of "Who Dunit?" Unfortunately, I've not been able to figure it out. Here's what I know: In 45 minutes a virus will be released throughout the area. People will get sick and die and from there it will only spread: other family members, friends, neighbors, other cities, eventually the whole United States. Whoever is responsible for this impending crime is clearly an expert in viruses and chemistry. He or she has created a sick puzzle that I can't seem to solve. This is where you come in. I recently received a package that contained the following: 1 large black box, 1 small black box, and a folder full of some chemistry problems. It's been so long since I've studied chemistry that none of this makes any sense. That's where you all come in. I also received an email with a link. The link asks for a person's name. I'm guessing if the correct name is entered, all this will go away and the virus will not be let loose. I've tried and tried but can't seem to figure out the name. I'm sure the contents of the package will provide some clues. Can you help?!?



# Clock Countdown



## Debrief

What skills/knowledge was required to complete the game?

How does participating in a breakout game support STEM?

How could breakout games be incorporated into your science classroom?





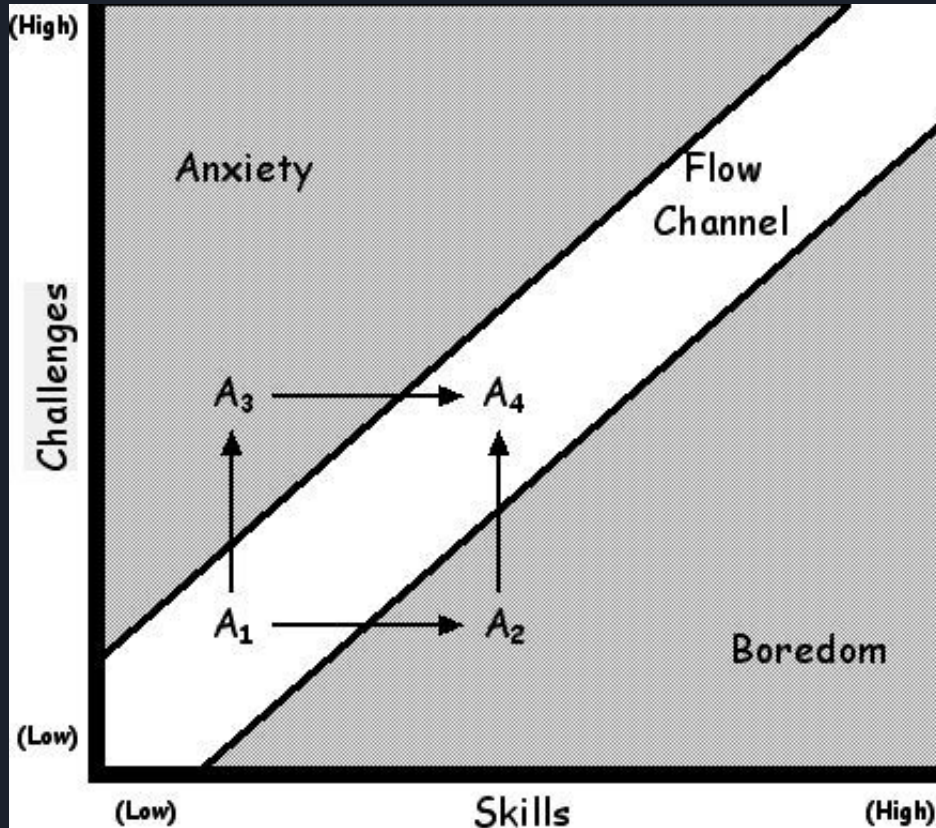
# Why Breakout Boxes?



“Therefore, we conclude that science engagement matters greatly to science achievement. Enhancement of various aspects of science engagement would improve science achievement of U.S. students. Our policy recommendation is for U.S. education policymakers, school leaders, and classroom teachers to enhance aspects of science engagement of students (Grabau & Ma, 2017, pg. 1058).”



# Why Breakout Boxes?



From [Flow: The Psychology of Optimal Experience](#)  
by Mihaly Csikszentmihalyi (page 74)



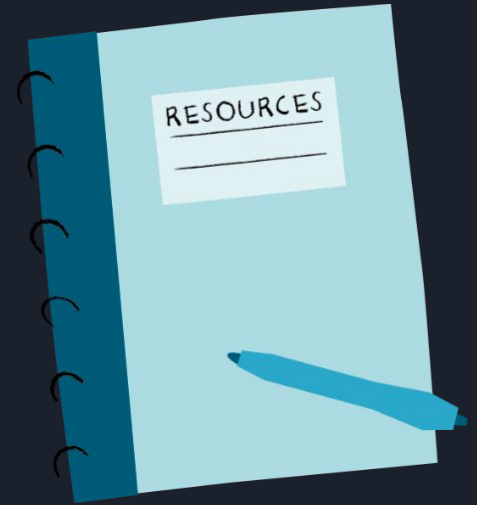
<https://tinyurl.com/yc3qezsz>

<https://www.breakoutedu.com/>

Free to create an account

User Generated Games are Free

Access to the [Chemistry Gone Viral Breakout Game](#)





# Reference

Grabau, L. J., & Ma, X. (2017). Science Engagement and Science Achievement in the Context of Science Instruction: A Multilevel Analysis of U.S. Students and Schools. *International Journal of Science Education* 39(8), pg. 1045-1068.

Flow Graph.

<https://scienceandvalues.wordpress.com/2010/02/26/csikszentmihalyis-flow-pleasure-and-creativity/>