

FLIPPED LEARNING

Michael Rosenbrock

Maths and Science Curriculum Team Leader
Wodonga Senior Secondary College

@mrrosenbrock

<http://mrrosenbrock.com>

WELCOME

What I will address today:

What is flipped learning?

Why flip?

How can it be done?

How has it worked for me in my classes?

Resources online: bit.ly/STAVPhysics15

Backchannel for questions/comments:
padlet.com/mrrosenbrock/STAVPhysics15

WHAT IS FLIPPED LEARNING?

It is a deliberate shift

from the **sage on stage,**

to the **guide on the side**

It is not that new

The idea can be traced to the early 1990s

The term flipped learning began to be used in the early 2000s

It has taken off in the last few years, with the rise of student access to portable devices that can access the internet

WHAT IS FLIPPED LEARNING?

It is *not* just getting students to watch videos for homework

It is a reorganisation of the structure of teaching and learning

Exactly what flipped learning looks like varies greatly

KEY COMPONENTS

It is a **CORE** part of the teaching and learning program

Students use the resources provided
to **learn independently**

Students are held **accountable** for this learning

More **class time** is made available for **active learning** via:
problem solving, application, extension, exploration, practical work

WHY FLIP?

Students are more **responsible** for their learning

Better use of class time

Students can **self-pace** their learning

It supports **differentiation and scaffolding**

It increases student **engagement**



NICE IDEA, BUT HOW CAN IT BE DONE?

Making space for flipping in the teaching program

Making the change in class culture

Finding resources to use

Making resources to use

Getting students to accept the shift

MAKING SPACE FOR FLIPPING

Pick a unit,
take a leap of faith,
give it a go.

Don't try and flip everything,
just start somewhere

CHANGING CLASS CULTURE

Flipped learning can be **confronting**
for both teachers and students

Suggestions for making the change work:

Make it **core**, not optional

Provide plenty of **support**

Actively **reward** involvement

Don't rescue students that don't follow the program

Decide what to do with the **class time** and prepare for it

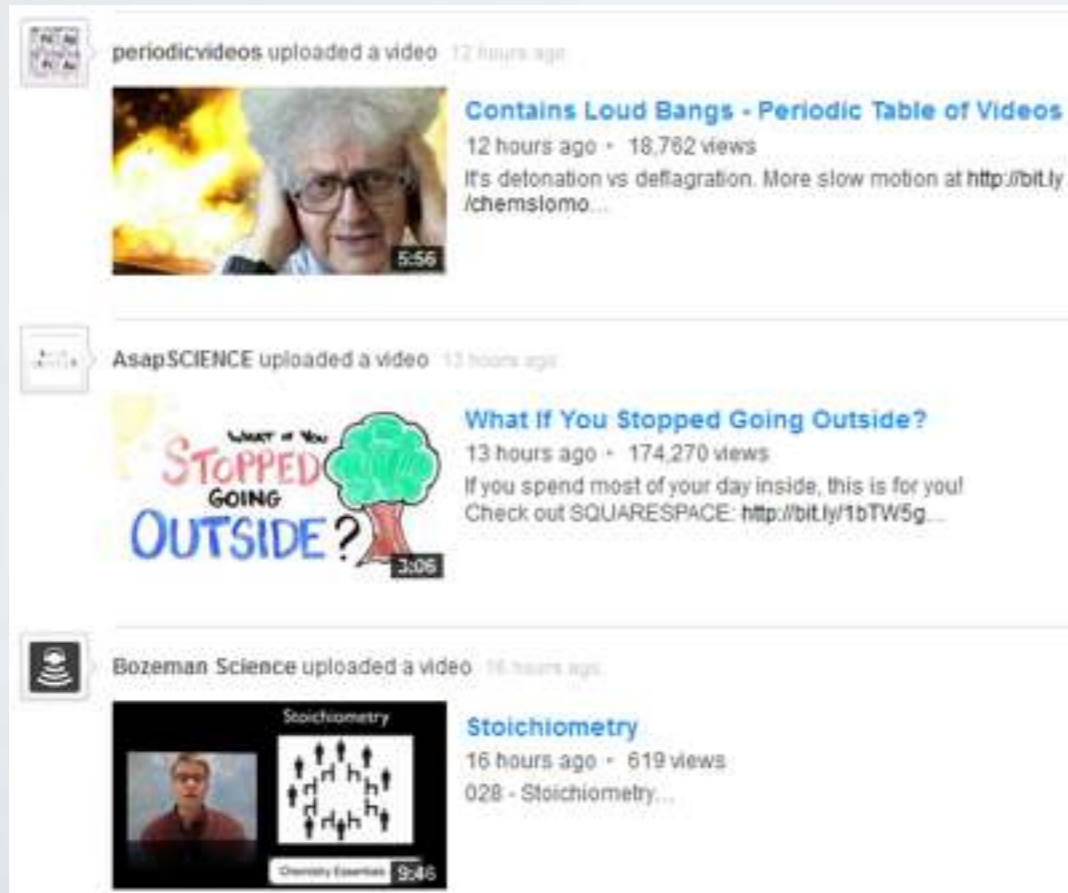
FINDING RESOURCES

The quickest way to flip is to use what others have shared:

YouTube

youtube.com

Use subscriptions and playlists to find and organise content



periodicvideos uploaded a video 12 hours ago

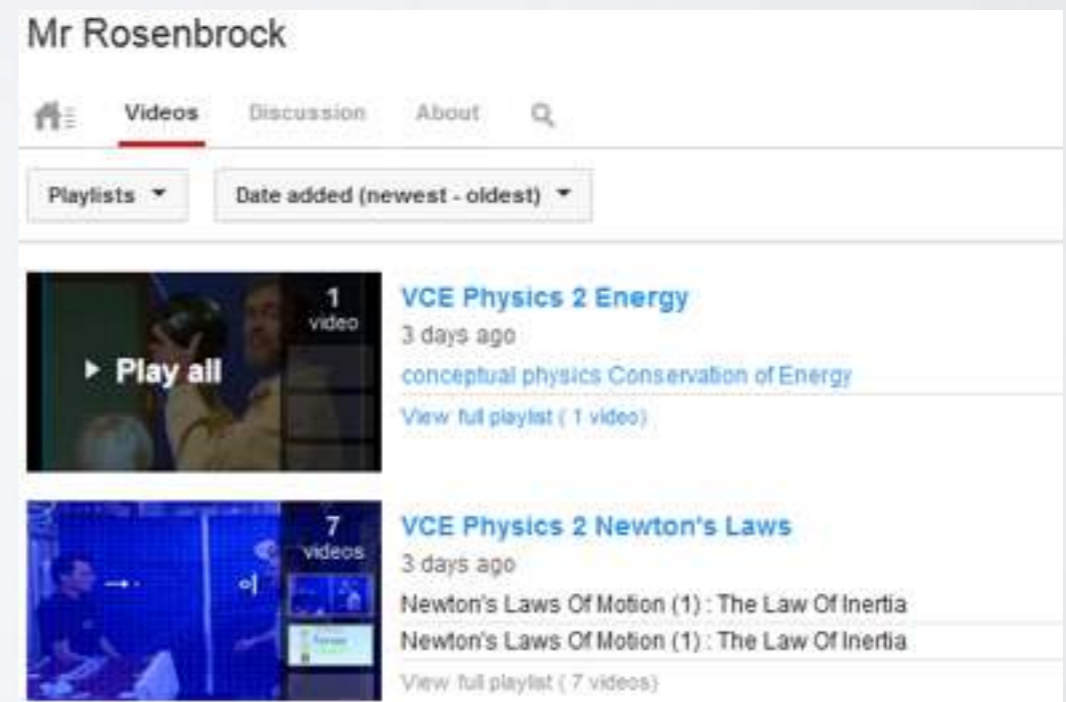
Contains Loud Bangs - Periodic Table of Videos
12 hours ago · 18,762 views
It's detonation vs deflagration. More slow motion at <http://bit.ly/chemslomo...>

AsapSCIENCE uploaded a video 13 hours ago

What if You Stopped Going Outside?
13 hours ago · 174,270 views
If you spend most of your day inside, this is for you!
Check out SQUARESPACE: <http://bit.ly/1bTW5g...>

Bozeman Science uploaded a video 16 hours ago

Stoichiometry
16 hours ago · 619 views
028 - Stoichiometry...



Mr Rosenbrock

Videos Discussion About

Playlists Date added (newest - oldest)

VCE Physics 2 Energy
3 days ago
conceptual physics Conservation of Energy
[View full playlist \(1 video \)](#)

VCE Physics 2 Newton's Laws
3 days ago
Newton's Laws Of Motion (1) : The Law Of Inertia
Newton's Laws Of Motion (1) : The Law Of Inertia
[View full playlist \(7 videos \)](#)

FINDING RESOURCES

The quickest way to flip is to use what others have shared:

TED-ed

ed.ted.com

Specifically designed for flipped lessons,
includes video, questions, extra info

- Watch
- Think
- Dig Deeper
- Discuss

Flip This Lesson
Customize and share your lesson



FINDING RESOURCES


The quickest way to flip is to use what others have shared:

ABC Splash

splash.abc.net.au/secondary/science

Video clips with supporting resources for flipping

Do heavier things fall faster?



Things to think about

- 1. Before viewing
 - If a 5-kg medicine ball and a basketball were dropped at the same time from the same height, which do you think would hit the ground first? Why?
 - An object moves because there are forces acting upon it. What force causes things to fall to the ground?
 - Do you know any other forces that may influence the speed objects move at?
- 2. As you view
- 3. After viewing
- 4. Next steps

FINDING RESOURCES

The quickest way to flip is to use what others have shared:

Educreations

www.educreations.com

Screencasting community -
some using it for flipping,
some for extra support

Brightstorm

www.educreations.com

Commercially produced
videos - many are free on
their YouTube channel



FINDING RESOURCES

The quickest way to flip is to use what others have shared:

Khan Academy

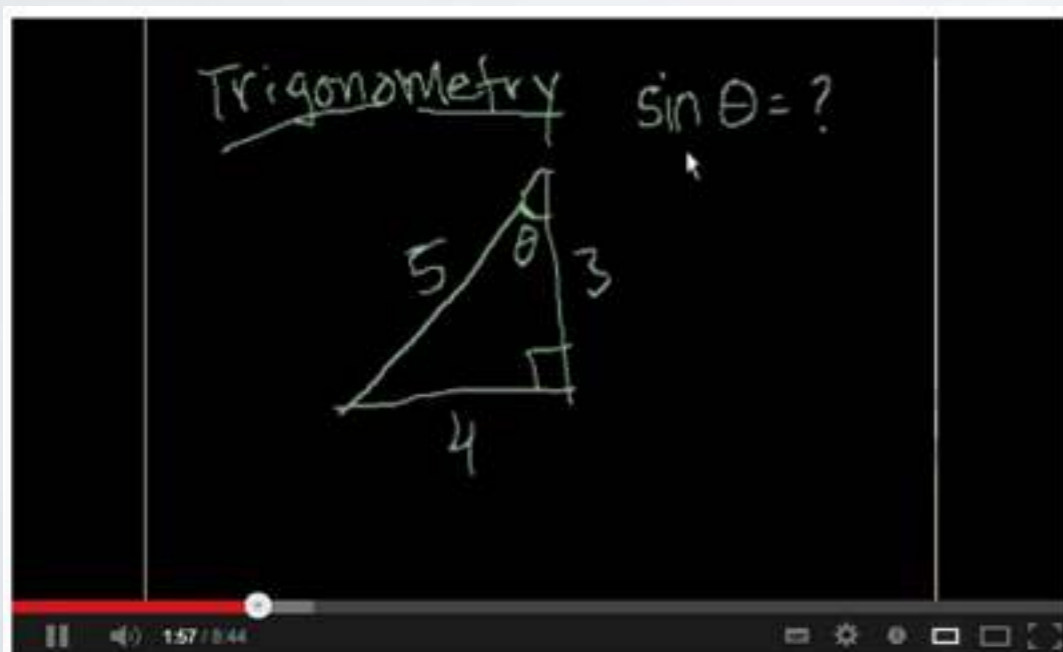
www.khanacademy.org

The original video education site - oft criticised - recently majorly upgraded

Club Academia

clubacademia.org

Short, highly targeted videos produced by students - high quality and engaging



MAKING RESOURCES

There is never enough time, so to make this happen,
it needs to be **done quickly**

Aim for:

minimal preparation; single take;
no editing (perfection isn't important)

There are lots of **different methods** people use

VIDEO OF WHITEBOARD

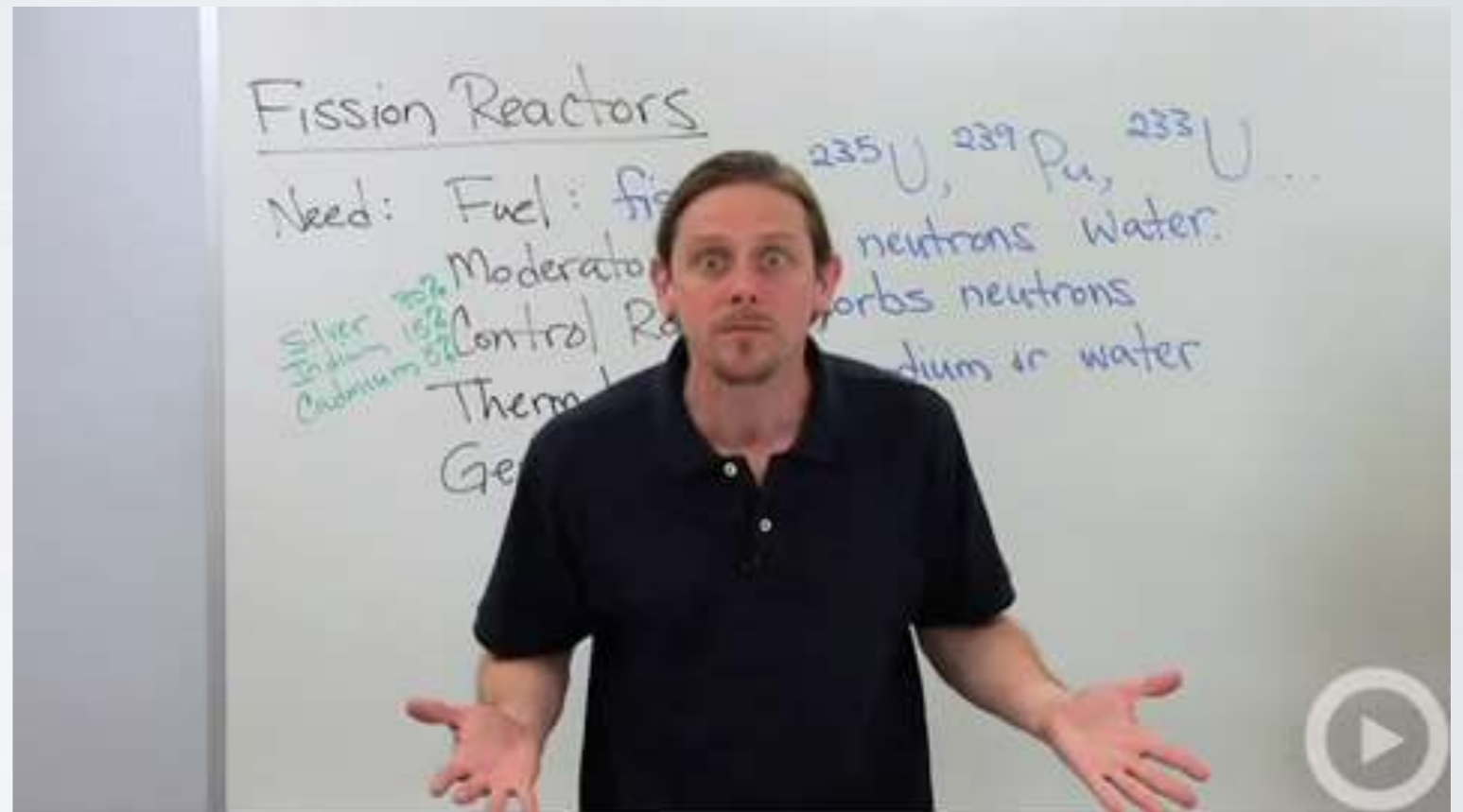
Essentially a video of your direct teaching

Camera suggestions:

- Phones/Tablets
- Flip Cams
- GoPro

Free editing software:

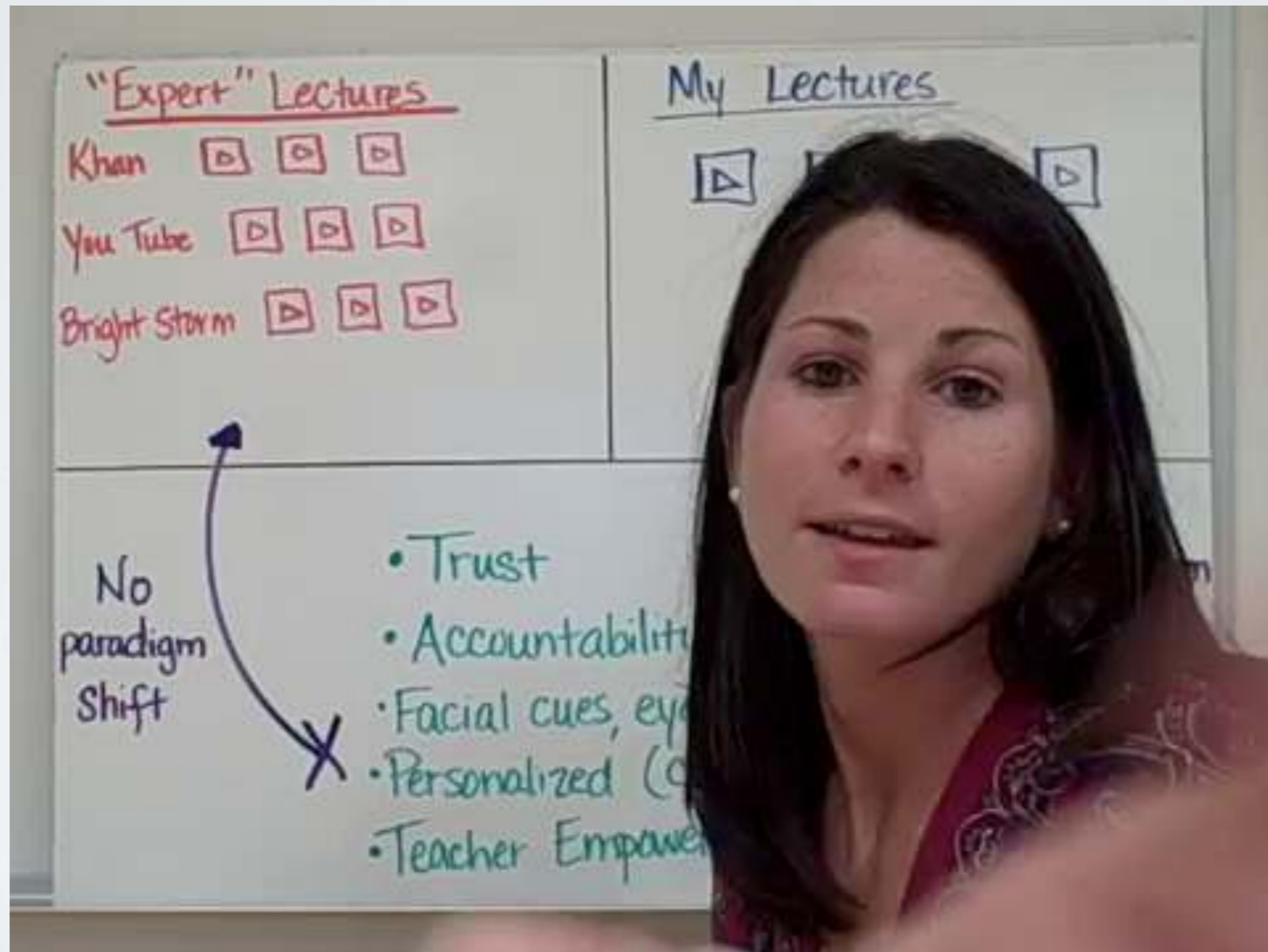
- Mac: iMovie on a Mac
- Windows: Movie Maker
- Web: YouTube Editor, Mozilla Popcorn



Video: [Fission Reactor](#) by [Brightstorm](#)

VIDEO OF FLASH CARDS

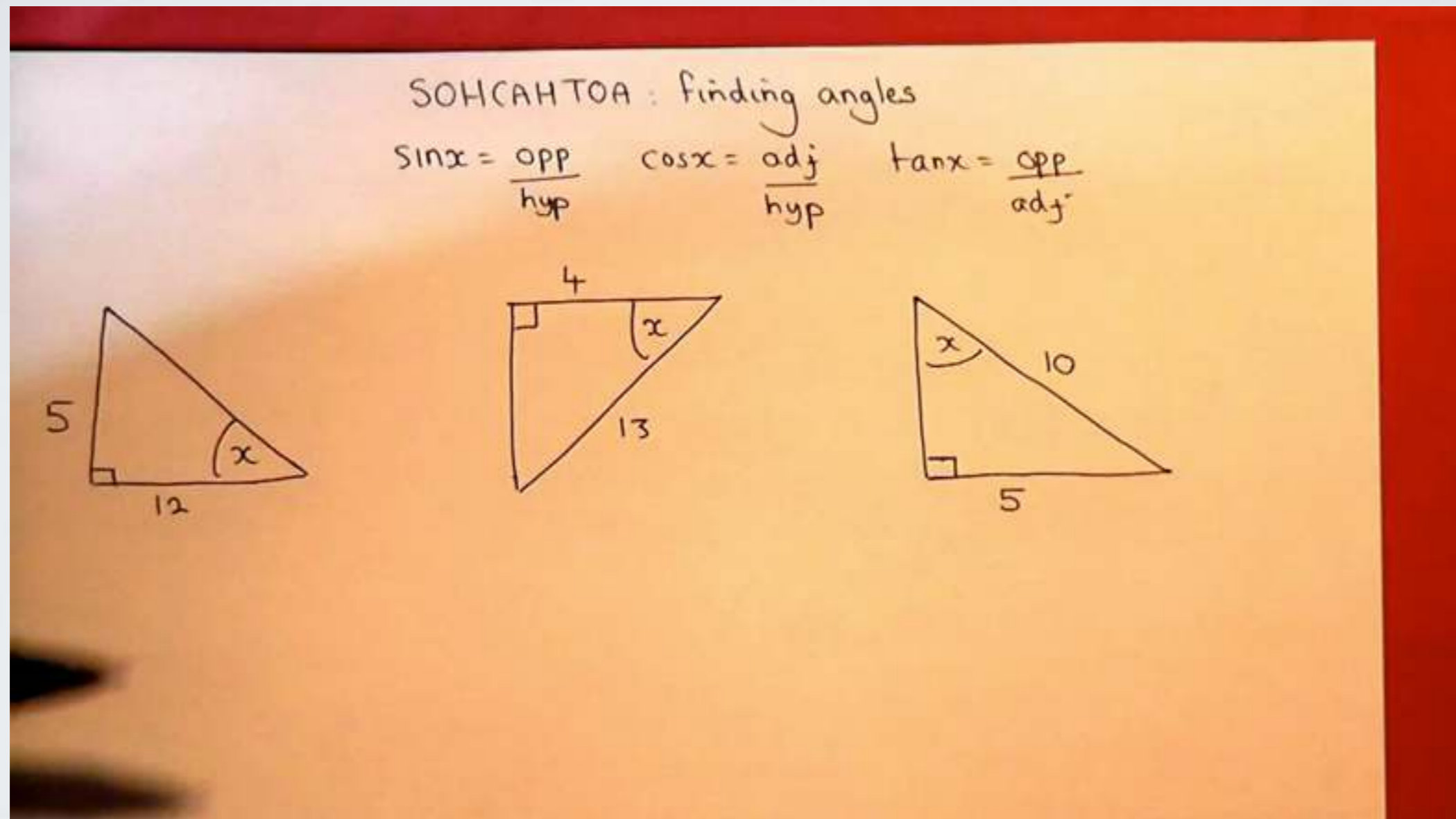
Same setup as a whiteboard, but pre-made cards can be quicker



Video: [Katie Gimbar's Flipped Classroom - why it has to be me](#) by [Lodge McCammon](#)

VIDEO OF PAPER

More convenient to do at home or in an office



Video: [Trigonometry Basics : SOHCAHTOA](#) by [jayates79](#)

SCREENCAST FROM IPAD

Quick, easy, flexible

iPad Apps that work well:

- Explain Everything (\$3)
- Educreations (free)

Recommendations:

- Good for making quick videos
- iPad mini is a bit small
- A good stylus is essential
- Explain Everything is great because you can easily overwrite mistakes
- Upload direct to YouTube is also really useful



Video: [Force is a vector](#) by [mrrosenbrock](#)

SCREENCAST FROM COMPUTER

High quality presentation

Tablet suggestions:

- Wacom Bamboo

Software suggestions:

- Quicktime (free, Mac)
- Screencast-O-Matic (free, Web)
- Camtasia Studio (\$300, Mac/Win)
- Screenflow (\$110, Mac)
- Screenr (free/paid, Web)



Video: [How to Make an Educational Screencast \(Mac\)](#) by [Bozeman Science](#)

SUPPORTING STUDENTS

Just watching videos

can quickly become

boring and disengaging

Strategies are needed to

explicitly support students

and to keep them accountable

STRUCTURED NOTE TAKING

To scaffold students, I've used a notetaking proforma for some flips (using Cornell Notes)

| | |
|--|---------------|
| Essential Question: How can forces be resolved into components? | |
| Questions and Cues: What are the trigonometric ratios? (draw a picture) How can you use trig to find side lengths? | Notes: |
| Summary: Summarise what you learnt. | |

SENTENCE FRAMES

Sentence frames are another option for summarising - although it seems very simplistic, it models correct use of language which is important in VCE

Forces on objects cause changes in _____,
_____ and _____.

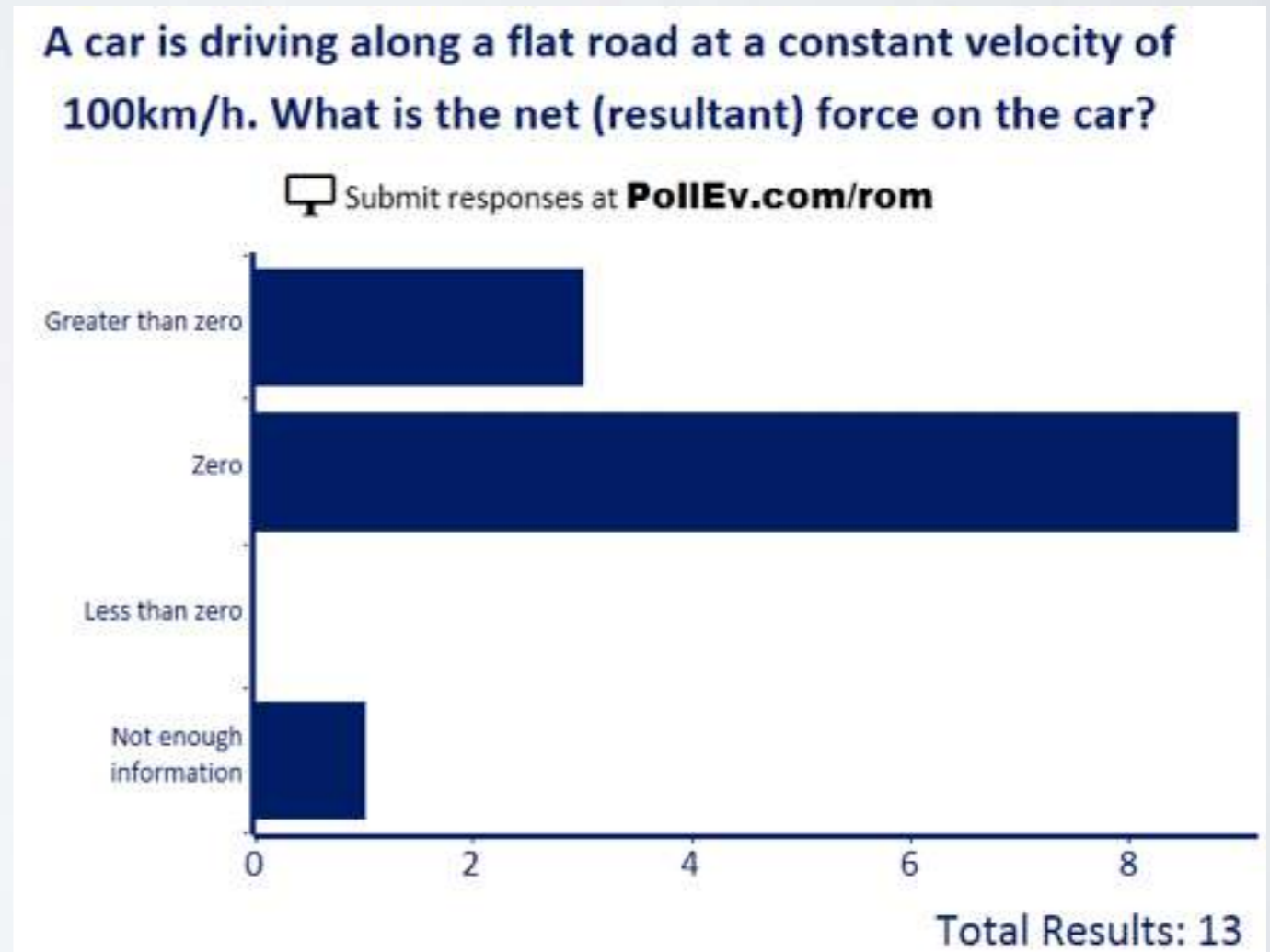
Inertia is a property of things that have _____.

It describes the resistance of these things to changes in their
_____ of _____.

POLL

I've used polls to collect responses on topics where student misconceptions are common

PollEverywhere is a good free tool for this

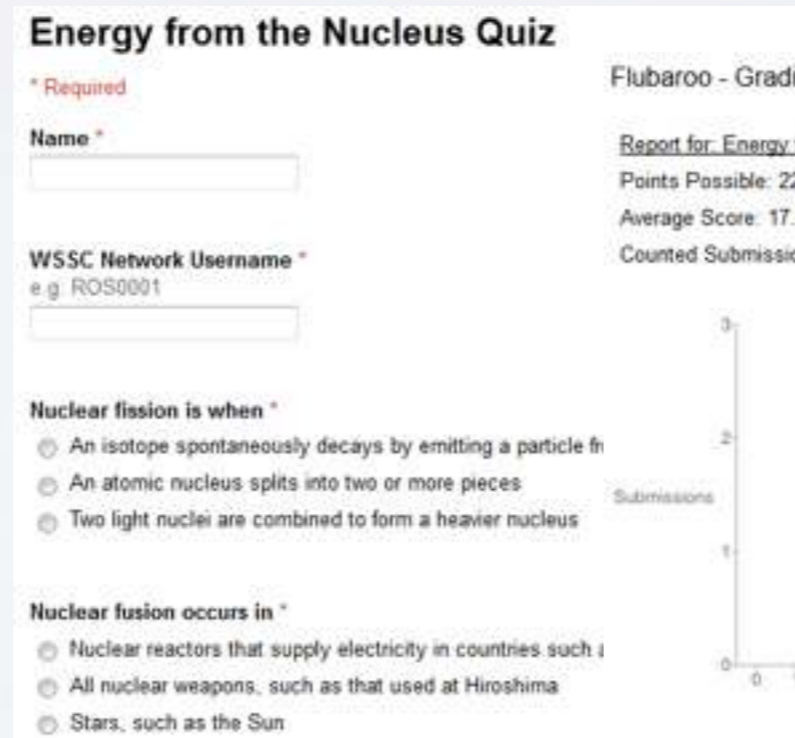
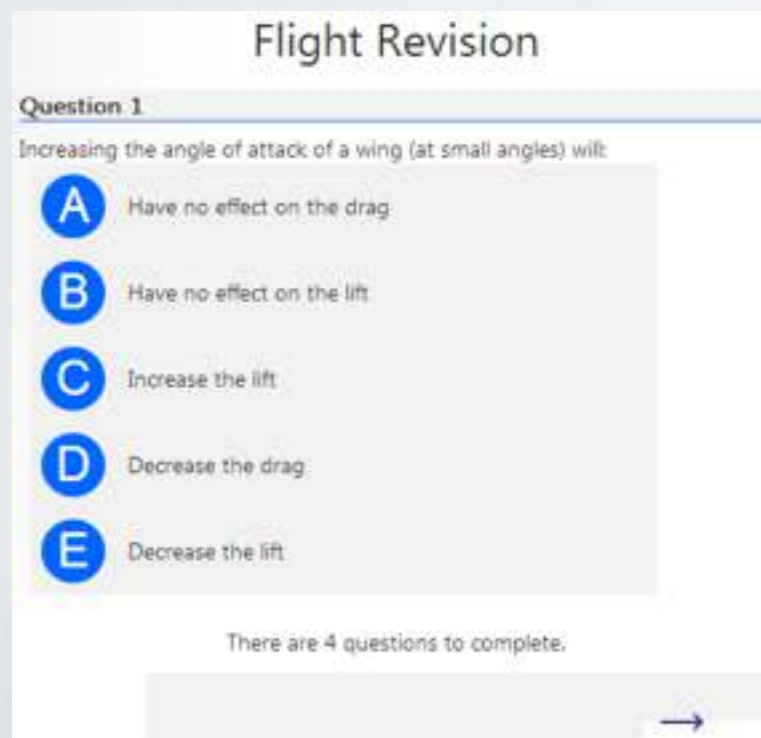


QUIZ

I've used quizzes to provide instant feedback to students. This can be effective in prompting students to consolidate and reflect on what they learnt

Immediate response
WordPress +
mTouch Quiz

Feedback at a set time
Google Drive + Flubaroo



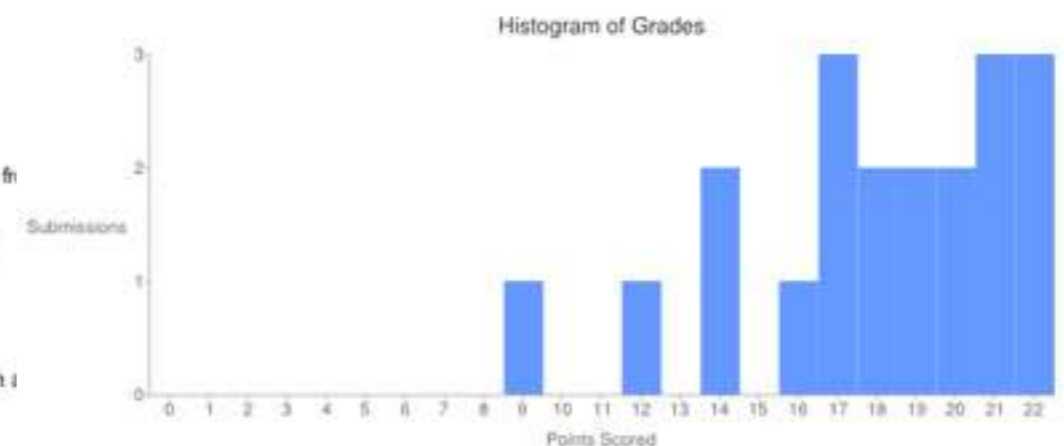
Flubaroo - Grading Report

Report for: Energy from the Nucleus Quiz

Points Possible: 22

Average Score: 17.95 points

Counted Submissions: 20



PREDICT - OBSERVE - EXPLAIN

Flips can also be about experiments: a predict-observe-explain structure suits this. This is particularly relevant for experiments we can't do at school

Tube chop and Viewrz can be used to select a section of a YouTube video

Students can then be prompted to

- watch the introduction
- make (and record) a prediction
- observe what happens
- provide an explanation

BLOG POSTS AND COMMENTS

This is a good way to get longer form feedback for both teacher and student

Padlet (Wallwisher) Wall

Newton's Third Law
Describe an interaction that fits with Newton's Third Law. Identify the force pair.
Force-B-on-A

Mr Rosenbrock
The rocket pushes on the water, and the water pushes back on the rocket. $F_{\text{rocket-on-water}} = -F_{\text{water-on-rocket}}$

Isaak
The tin on the table pushes on the table (F-tin-on-table) and visa versa.

Amie
Chris pushes on Mr. Rosenbrock and Mr. Rosenbrock pushes back. $F_{\text{Chris-on-Mr.Rosenbrock}} = -F_{\text{Mr.Rosenbrock-on-Chris}}$

Stuart.
Two people on wheelie chairs push on each other, the people on chairs go in opposite directions.

Carlotta
when you push on the ground, the ground pushes back on you.

Reflective Blog Post

In physics i am finding the detecting of different types of radiation simple and am completing the work in this area.

The area's i need to focus on is keeping up to date with the homework side of things. I struggle to get focused when not at school.

Facebook Comment

Mr Rosenbrock shared a link.
26 June

Physics challenge for everyone... In this well known TAC ad, the braking performance of two identical vehicles that started at different speeds is compared. This is a kinematics problem (use the constant acceleration or XUVAT equations). Wh... See more

"Slo-Mo" TAC Anti Speed TV Ad
Many people were sceptical that driving 5 km/h slower could make a difference to speed on impact. With the help of crash expert Dr Ian Johnston, and an airfi...

Like · Comment · Share 2 1

2 people like this.

Write a comment...

Mr Rosenbrock Why would you need to know reaction... isn't it just the braking ?
Like · Reply · 26 June at 22:40 via mobile

Mr Rosenbrock They travel the same distance, x , from when they see the truck and react, so you need to include it in your calculation - the faster car will travel further while reacting, so will have less distance left for braking

STUDENT INVOLVEMENT

Teaching others can be a
demonstration of mastery learning

Rather than using other people's videos,
or making your own, why not try
getting students to make their own videos

Suggest using either tablets/phones to record simple video or
use free software like Screen-Cast-O-Matic

WHERE TO FROM HERE?

What is one new or different thing
from this session that you are going to
try in your teaching practice?

Please post your response
and any feedback on the presentation to
padlet.com/mrrosenbrock/STAVPhysics15

Resources online at bit.ly/STAVPhysics15