



# FLIPPING THE EAL MATHS CLASSROOM

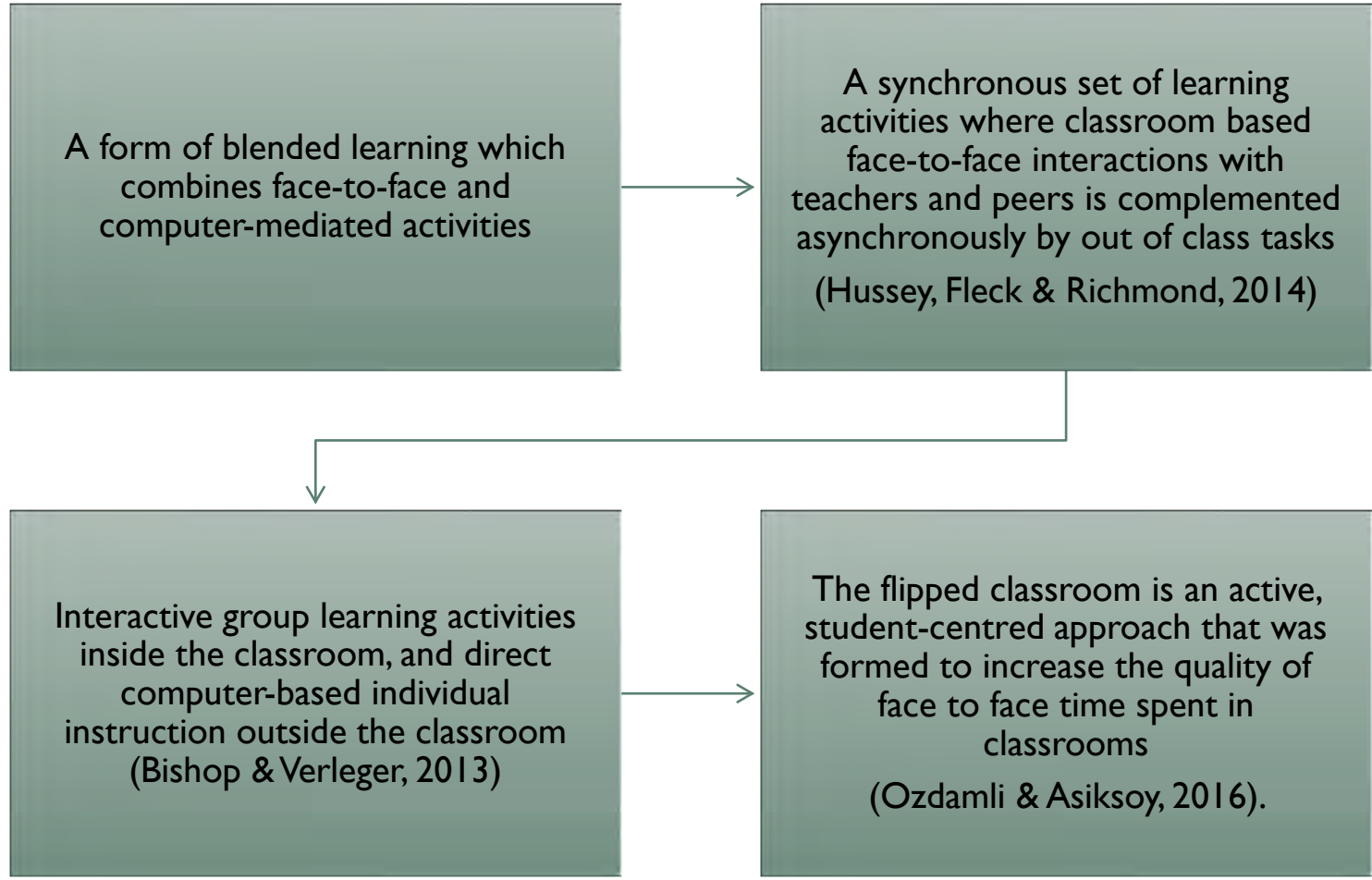
DR. BERNADETTE MERCIECA  
RMIT TRAINING

# PRESENTATION PLAN

What the  
Research  
says

How the  
classroom  
can be  
flipped

EAL  
learners  
and Flipped  
Classrooms



# WHAT IS FLIPPED LEARNING

# A MODEL OF THE FLIPPED CLASSROOM

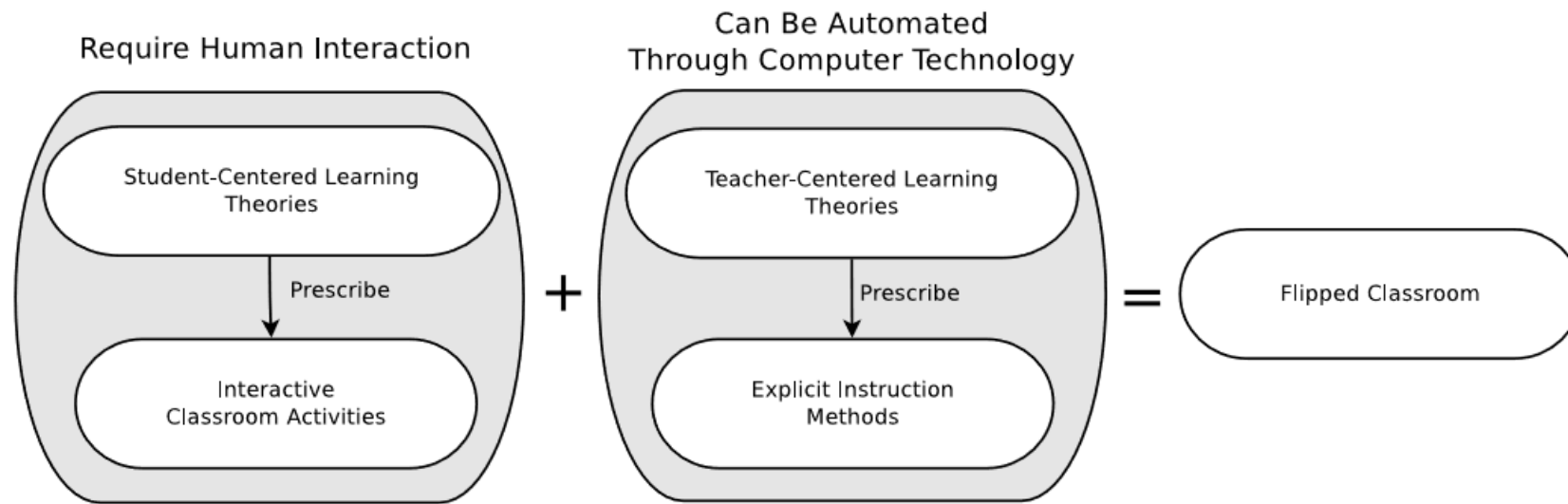
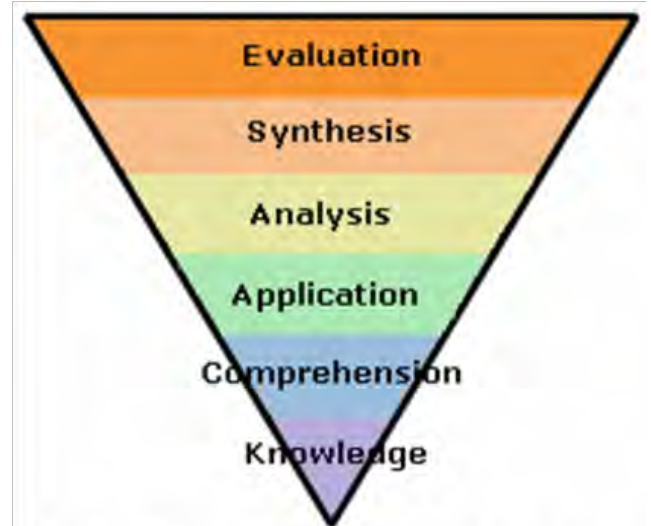


Figure 1: Flipped Classroom.

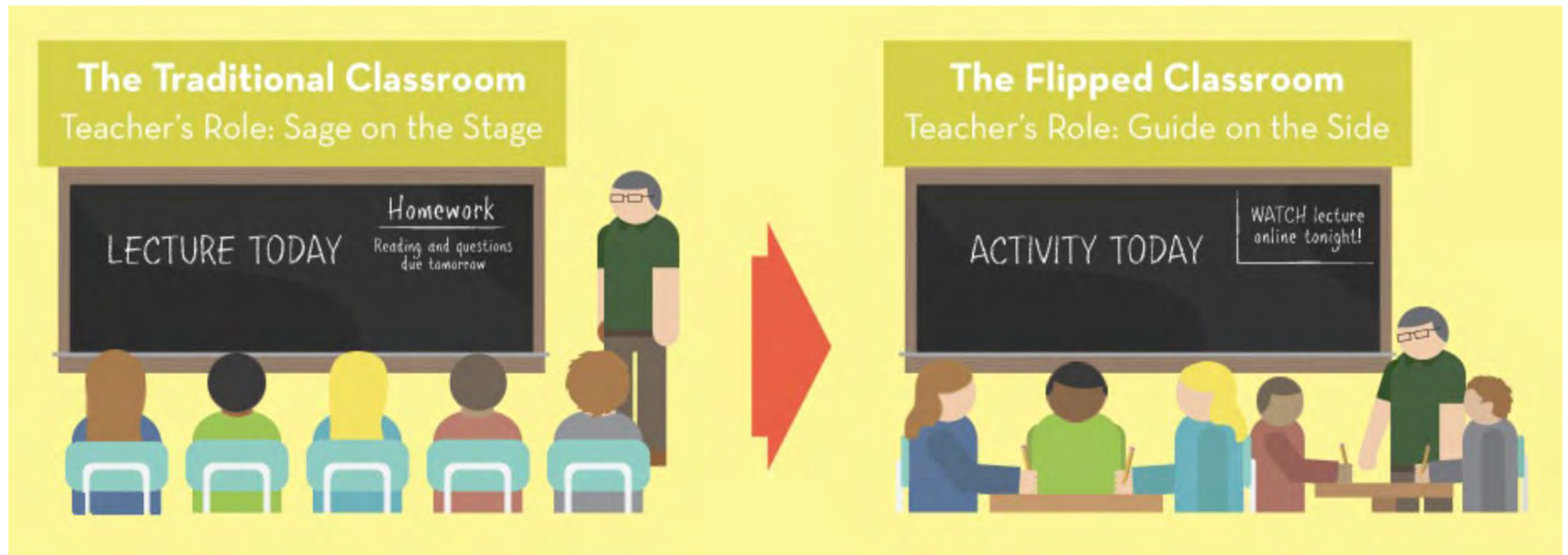
Bishop & Verleger (2014) The Flipped Classroom: A survey of the research

# FLIPPING BLOOM'S TAXONOMY



Flip Bloom's Taxonomy for Gifted Learners to spend LESS time on wrote skills to build knowledge and MORE time on Evaluation (Creating).

# TEACHER MOVES FROM BEING 'THE SAGE ON THE STAGE' TO THE 'GUIDE ON THE SIDE'



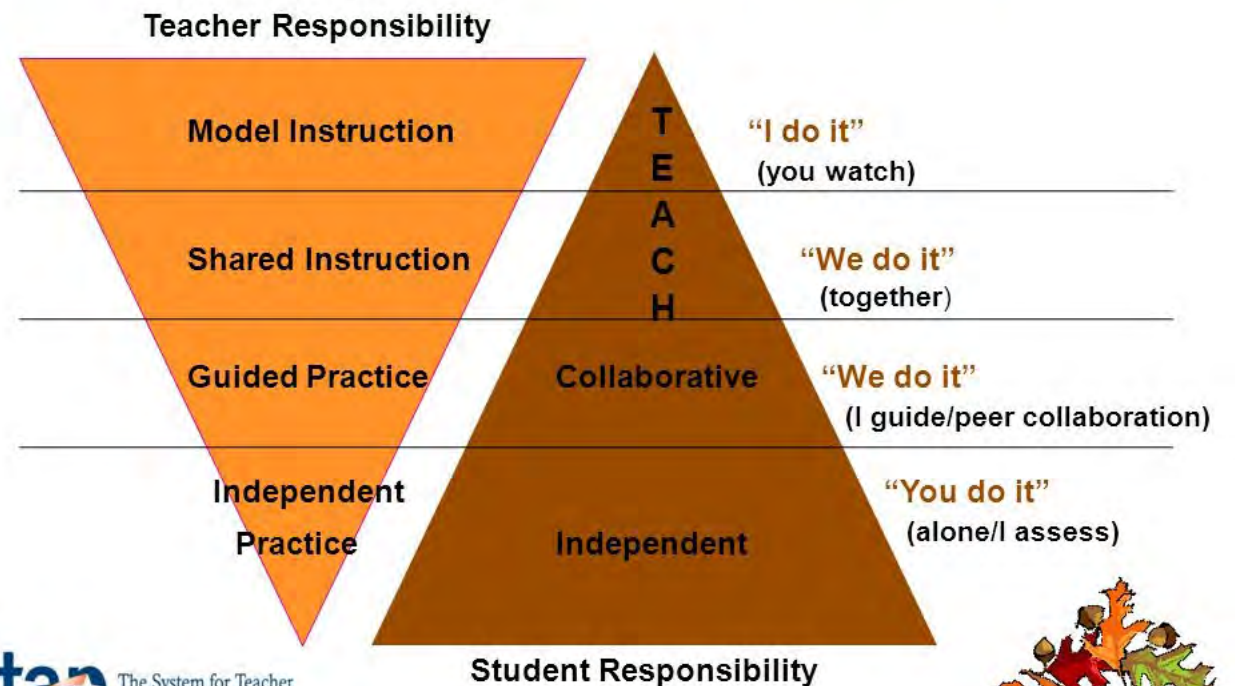
**Poll Everywhere** <https://bit.ly/2SwNB6e>

Accessed from <https://www.knewton.com/infographics/flipped-classroom/>

# MOVING TOWARDS A FLIPPED CLASSROOM: THE GRADUAL RELEASE OF RESPONSIBILITY MODEL

- The Gradual Release of Responsibility Model was first named by Pearson and Gallagher (1983)
- Aims to shift the responsibility of cognitive load slowly and purposely from the teacher to the student
- Aims to develop independent, confident learners

## Gradual Release Model







Saves time in the classroom by reversing the role of homework and classwork, leading to more student-centered classes.

Gives students time to digest material before coming to the classroom and to return to videos in preparation for tests and exams.

Encourages students to take greater control of their learning.  
If teacher is absent, there is material to go back over.

“Has the potential to enable teachers to cultivate critical and independent thought in their students, building the capacity for life-long learning and thus preparing students and thus preparing future graduates for their work place context” (O’Flaherty & Phillips, 2015)

## ADVANTAGES OF FLIPPING THE CLASSROOM





Students supplied with optional video lectures came to class much better prepared than when they had been given textbook readings  
(DeGrazia, Falconer, Nicodemus & Medlin, 2012)

It is easier for students who may have missed class due to illness or excursions to keep up because they can watch the videos at any time.

Covering propositional knowledge before a session, and then considering functioning knowledge within the session, would be congruent with the needs of adult learners (Eaton, 2017)

*“When most people hear about the flipped class all they think about are the videos. It is the interaction and the meaningful learning activities that occur during the face-to-face time that is most important.”*  
(Aaron Sams and Jonathan Bergmann – pioneers of the flipped classroom)

## MORE ADVANTAGES OF FLIPPING THE CLASSROOM



For EAL learners, the flipped classroom approach maximizes the amount of time students speak English in class and minimizes the amount of teacher talk time.

Engaging with video material at home prior to a class, allows EAL learners to hear key vocabulary being used, that will be reinforced in the following lesson.

Differentiation can occur with students working towards achieving mastery of knowledge and skills at their own pace (rewinding, pausing, re-viewing) (Cimino, 2018)

At home, after the class, EAL students can engage with the material as many times as they wish, pausing where necessary, taking notes..

## PARTICULAR ADVANTAGES FOR EAL LEARNERS

# HOW TO FLIP A SENIOR MATHS CLASSROOM

*Lo and Hew's (2017) comparative study of Form 6 (Year 12) underperforming (Study 1) and Form 6 high-performing students (Study 2) in Hong Kong*

Overview of the class schedule of the remedial program in Study 1

Session	Video lecture (out-of-class)	Face-to-face lesson
1	Mid-point of two points; Distance between two points; and Slope of straight line	Transformation of point Advanced problems
2	Equation of straight line; $x$ - and $y$ -intercept of straight line; and Interception point of straight lines	Perpendicular lines Advanced problems
3	Slope of the equation of straight line; Line perpendicular to straight line; and Perpendicular bisector of two points	Concept of locus Real-world problems

# PRE-TEST AND POST-TEST RESULTS FOR THE REMEDIAL PROGRAM, STUDY

	Mean	Standard Deviation
Pre-test	2.77	1.79
Post-test	5.85	2.41

There was a significant difference between the pre and post-test scores. Students reported, “We can review the videos where necessary” (Student 1) and “I find learning in groups better since my classmate can answer my questions immediately when I don’t understand” (Student 7) in relation to the classroom activity (Lo & Hew, 2017, p. 228).

# HOW TO FLIP A SENIOR MATHS CLASSROOM

*Lo and Hew's (2017) comparative study of Form 6 (Year 12) underperforming (Study 1) and Form 6 high-performing students (Study 2) in Hong Kong*

Overview of the class schedule of the advanced program in Study 2

Session	Video lecture (out-of-class)	Face-to-face lesson
1	Review on sequences; and Introduction to arithmetic sequences	Advanced problems
2	Introduction to geometric sequences	Advanced problems
3	Distinguishing between arithmetic sequences and geometric sequences; and Introduction to summation of sequence	Real-world problems
4	Summation of an arithmetic sequence	Real-world problems
5	Sum of the first $n$ terms of a geometric sequence	Real-world problems
6	Sum to infinity of a geometric sequence	Real-world problems

# PRE-TEST AND POST-TEST RESULTS FOR THE ADVANCED PROGRAM, STUDY

	Mean	Standard Deviation
Pre-test	2.00	1.77
Post-test	8.08	3.03

A paired t-test showed that there was significant difference between the pre-test mean ( $n = 24$ ,  $M = 2.00$ ,  $SD = 1.77$ ) and the post-test mean ( $n = 24$ ,  $M = 8.08$ ,  $SD = 3.03$ ),  $t(23) = 9.43$ ,  $p < .0001$ . Students in this group reported, “I am more motivated to learn in the flipped classroom” whilst 87.5% of students agreed or strongly agreed that “the flipped classroom has improved my learning of Mathematics” (Lo & Hew, 2017, p. 230).

# PARRAMATTA MARIST HIGH SCHOOL

“Every lesson in every subject through to HSC is flipped” (Challinor, 2016).

- Some as long as 25 minutes
- Later reduced to 4-7 minute videos
- Long enough for a key point to be clearly explained.
- Videos created using Explain Everything
- Quiz accompanying some videos





# WAYS OF FLIPPING THE MATHEMATICS CLASSROOM (FREE SOURCES)

1. Woo Tube

2. Khan Academy



**KHAN**  
ACADEMY

WAYS OF FLIPPING THE  
MATHEMATICS CLASSROOM  
(PAID SOURCE)

MATHS SPACE



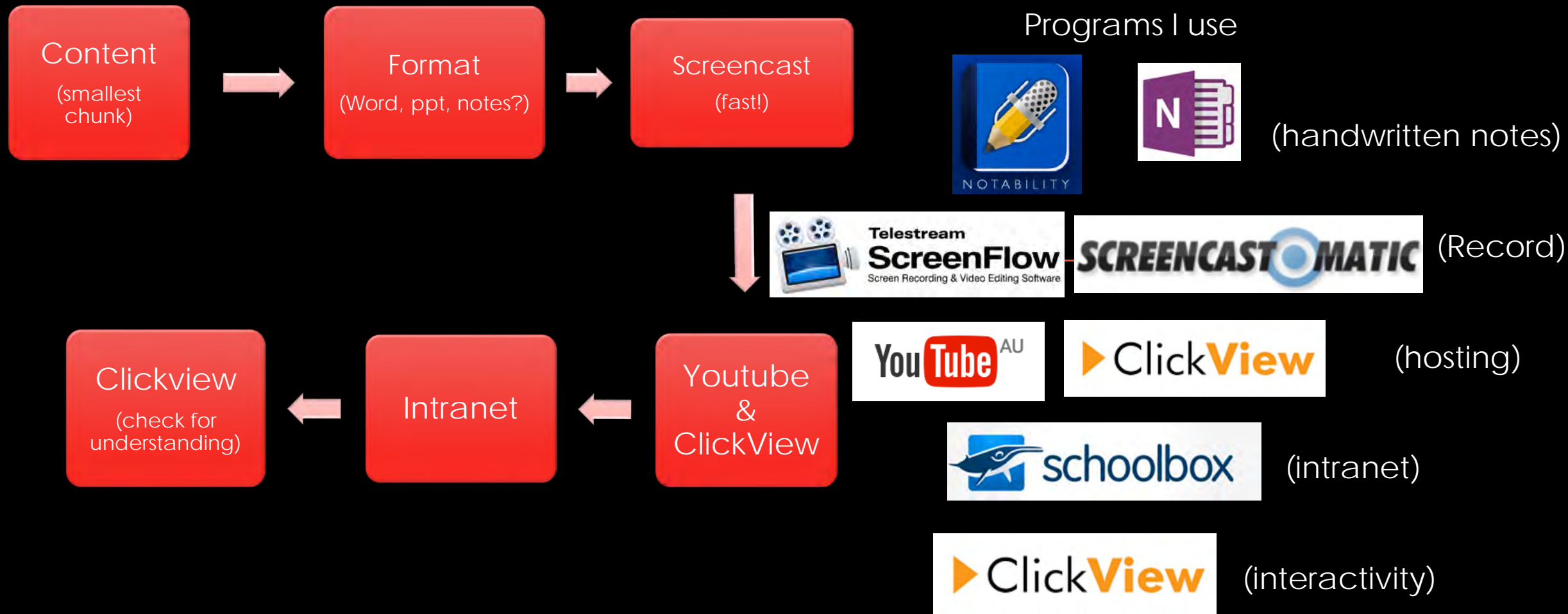
## PRACTICAL CONSIDERATIONS

Scaffolding the  
introduction

Being selective  
in choice of  
online materials

Length of  
videos

# MY WORKFLOW – 6 EASY STEPS



# HOW DO YOU CURRENTLY HAVE YOUR NOTES WRITTEN?

- A. Powerpoint or slideshow
- B. Handwriting on board
- C. Typed up notes
- D. Handwritten notes/diagrams



# HOW DO YOU CURRENTLY PRESENT LESSONS?

- Powerpoint/slideshow → Screencasting
- Handwriting on board → Tablet, One Note or filming self
- Typed up notes → Screencasting
- Handwritten notes/diagrams → Document camera







## Lite

Record up to 10 minutes per video with an embedded Screencastify logo.

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# A free add-in for PowerPoint

Everything you need to easily create and share interactive online videos



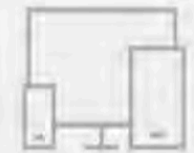
Voice, Video &  
Digital Ink



Polls &  
Interactive Apps



Insights &  
Analytics



Playback On Any  
Device

Get Office Mix ↓



Microsoft Word ribbon showing 'Home', 'Insert', and 'Design' tabs. The 'Home' tab is active, showing options like 'Paste', 'Monotype Co', and text formatting buttons (B, I, U).

- New Movie Recording ⌘⌘N
- New Audio Recording ^⌘⌘N
- New Screen Recording ^⌘N
- Open File... ⌘O
- Open Location... ⌘L
- Open Recent ▶
- Close ⌘W
- Save... ⌘S
- Duplicate ⌘⇧S
- Rename...
- Move To...
- Export ▶
- Revert To ▶
- Share ▶

Microsoft Word document content. Title: '9 Core Student survey 2017 [Compatibility Mode]'. Includes 'Review' and 'View' tabs, a ribbon with font styles (Emphasis, Heading 1, Normal, Strong), and a ruler. The main text area contains a survey form with fields for 'Name:', 'Date: November 2016', and questions about behavior and attitude.

Screen Recording window showing a progress bar at 'Zero KB' and a red recording indicator.

How would you describe your ability in the following

(H=high, M = Medium, L=Low)

	H	M	L
completing c			

Four colored buttons labeled A (blue), B (green), C (purple), and O (orange).





# Create, Collaborate, Share and Discover

Explain Everything is the most versatile interactive whiteboard available for your device - use it for sharing knowledge, building understanding, personal productivity and much more



## POPULAR USES FOR

- All
- Individuals
- Schools**
- Businesses



### Teach and Present

Start with blank canvas, prepare materials in advance, or import content in live instructional settings



### Create Explanation Videos

Use visuals, animations, and narration in instructional and explanatory videos about any topic or subject matter



### Provide Media Feedback

Add documents and images to the stage and the annotate, record, and quickly share feedback and suggestions



[View in iTunes](#)

+ This app is designed for both iPhone and iPad

\$9.99



logitech

# Logitech H110 Stereo Headset

Model: 981-000459(H110) SKU: 90802



Stereo headset with noise-cancelling microphone, ideal for talking for online conversations

- Noise Cancelling Microphone
- Great For Internet Calls, Music, Movies & Games
- Adjustable Headband & Microphone

★★★★★ 5.0 | (1)

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**SAMSON** Best Seller

# Samson Meteor USB Studio Microphone

Model: 29/METEOR SKU: 68811



Samson Meteor USB microphone is plug and play with PC, Mac and iPad, with a large condenser diaphragm, stereo headphone jack for no latency monitoring

- Large condenser diaphragms
- Compatible with iPad\*, PC & MAC\*\*
- Stereo Headphone jack\*\*\*
- Includes mic, carry pouch & USB cable

★★★★☆ 3.8 | (5)

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Twitch & Studio Recording!

**\$118**

✓ **Delivery** ?

In Stock:

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✓ **Pick Up** ?

Pick up generally available same day (please wait for your ready for pick up email confirmation)

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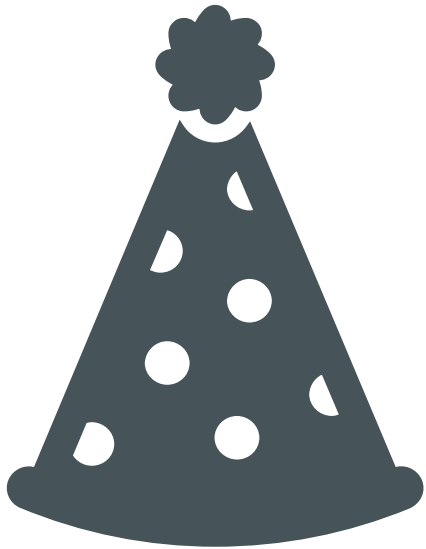
# SHARE THE LINK

- Add to your class page or intranet
- Often when you paste the link it will 'embed' into the page.
- Email to students
- Make your own google classroom page
- Keep a copy of the .mp4 file you can give to students on USB

- Time constraints - McLaughlin(2014) and colleagues estimated that in order to “flip” a class, a teacher would have to invest 127% more time for course development and management. After initial development, the same group found that after the initial development time, the flipped classroom requires 57% more time to maintain compared to a lecture course. Solution?
  - Student engagement – strategies?
  - Lack of technology in student homes – is this a problem?
- 
- McLaughlin JE, Roth MT, Glatt DM, et al. The flipped classroom: a course redesign to foster learning and engagement in a health professions school. Acad Med. 2014;89:236-243.

FURTHER  
CONSIDERATIONS/CONCERNS

## WHAT DO YOU THINK?



- Would a flipped classroom work in your classroom?
- What would help or hinder its implementation?
- Do you think your students would enjoy/learn from such an approach?
- How will you flip?

***TIME TO PLAY***

<https://www.surveymonkey.com/r/MAV1807>

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