Microsoft Innovative Educator Expert

What does the classroom of the future look like?

How can Microsoft help you to get closer to achieving this?

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BRISBANE BOYS' COLLEGE

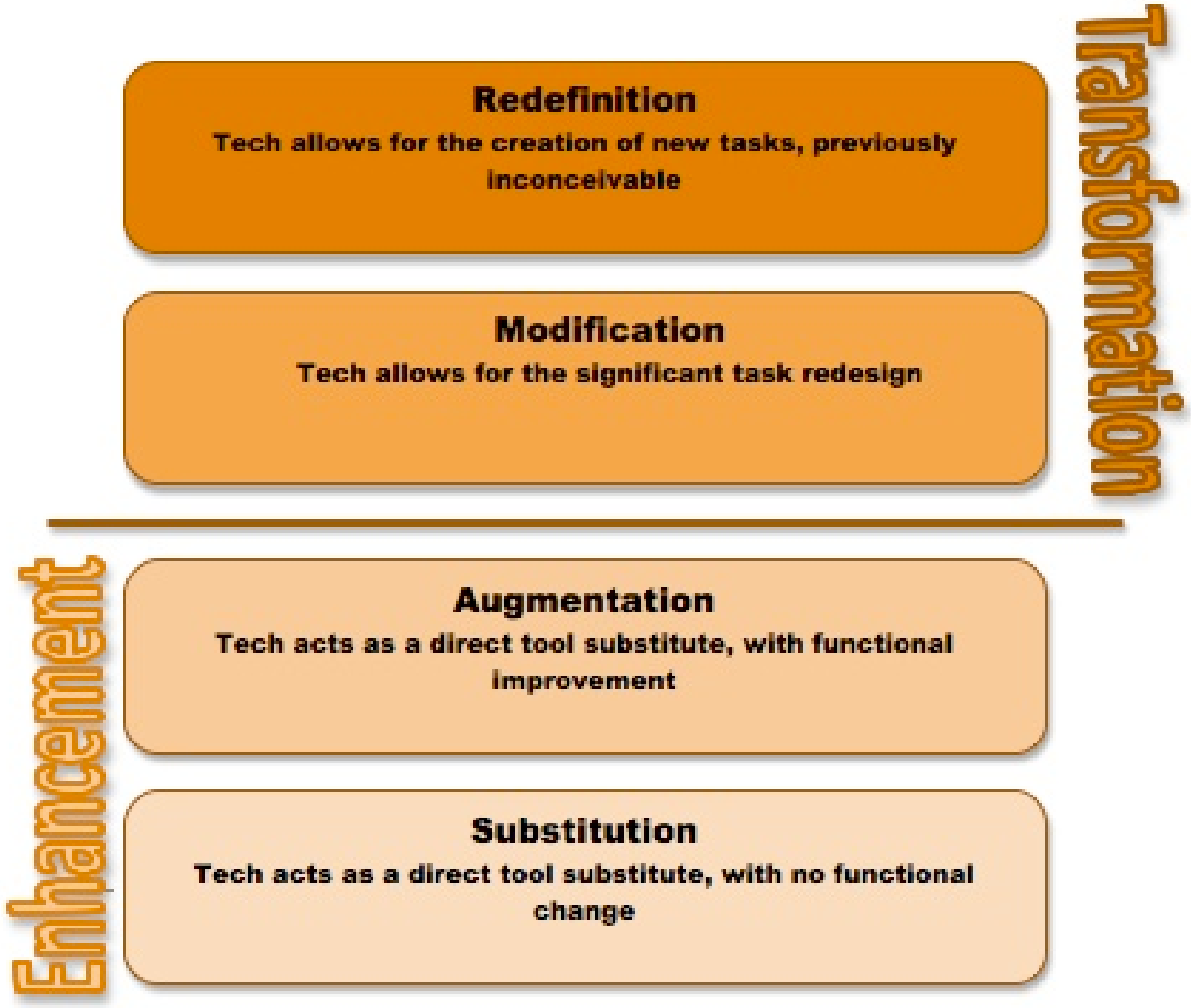
The plan...

1. Models to inform (tech and teach) change
2. Old school
3. New school
4. New learning spaces
5. Future tech
6. The future is now

   Examples, examples, examples
7. More new learning spaces

   More examples
8. The challenge


Image from: http://www.artlebedev.com/everything/toilets/



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https://designsinprogressdotcom.files.wordpress.com/2011/10/big-red-button.jpg

https://designsinprogressdotcom.files.wordpress.com/2011/10/big-red-button.jpg

Brisbane Boys' College AITSL Innovation Project – A Learning Enabled Community

Performance & Development
Professional Learning

Data

The Data Profile Tool has been developed over two years. Staff are now being introduced to it, training videos have been prepared for staff to view and 1:1 support will be provided. The instruction is not only in the use of the tool but in the importance and usefulness of the data that can be accessed by the tool, and specifically how classroom instruction and activities can be changed in response to knowledge and understanding of the student data, creating a more individual and relevant education experience for the students.

Learning Observation (pre)

Two Middle School classes will be followed as their teachers become proficient with the Data Profile Tool. The teachers will be filmed at the beginning of their instruction and then filmed after they have become proficient with the tool. These videos will be assessed by a Critical Friend (another teacher) and by the Director of Professional Learning to see if there has been any change in teacher pedagogy and student involvement in learning.

Reflection

The initial discussion has focussed on refining teaching goals linked to each teacher's Personal Activity Statement. Key elements of discussion have included; how to best use the individual and class data gleaned from the Data Profile Tool, strategies for grouping students to allow for differentiated instruction, and how to best utilise collaborative learning spaces.

Professional Learning Community

The Professional Learning Communities have been set up as a mechanism to support teachers in managing the change required in their teaching process. This process has allowed teachers to de-privatise their practice through open sharing of information in a small "trust-based" group. Although initially facilitated by the Director of Professional Learning, the groups have begun to self-lead through the development of a set of norms. Each PLC has also identified commonalities across their learning and teaching goals.

21 Century Pedagogies

The project is aspirational in terms of improving teacher quality, and builds on long-standing work around teacher use of data. The project aims to create "flipped classrooms" where the content is out-sourced to create greater time for individual feedback and differentiated instruction. This is supported by a Critical Friend and the development of a Professional Learning Plan. Ultimately, the project aims to use data sets to inform pedagogical practice to improve student outcomes (in the context of an ongoing professional reflection and learning model). Specific training in the use of 21 century teaching and learning modalities has been conducted in the context of classrooms that are technologically rich with flexible furniture and design.

Time

Teachers often, and quite rightly, ask "how do we find time?" to implement a new or additional initiative to their teaching practice; this is especially true in subjects that are content crowded. The flipped classroom methodology is a way of "buying class time" for the staff, by delivering some content to the student outside of class time (as homework) and then running a more focussed tutorial time within the classroom, best utilising the teacher's pedagogical expertise at an individual and small group level. In the current innovation, this flipped classroom context is allowing staff to respond to the data they have on students and classes, changing classroom activities and pedagogies as a result of the "bought class time" of one lesson per week.

Augmented Practice

By creating time within the curriculum, teachers are able to augment their practice, utilising flexible teaching spaces in conjunction with 21 century learning modalities, in response to the needs of the students and class. Changes in practice are supported by a variety of Professional Learning experiences including large group PD, small group focussed sessions, PLCs, professional reading and one-on-one discussions. Professional practice is supported and promoted through highlighting excellent practice in the "Inspire" PL magazine.

Learning Observation (post)

These videos will be assessed by a Critical Friend and by the Director of Professional Learning to see if there has been any change in teacher pedagogy and student involvement in learning. Additionally, a visual metric of teaching and learning modality and classroom use over time will be created, allowing visual comparison of learning changes in the classroom environment. Six students of varying achievement levels from each class will be interviewed on film at the beginning and end of the trial period to assess in their point of view, whether their learning has improved.

		Type	Assign	Assign	Assign	Exam	Exam	Exam	Exam	Exam													
		Weight	10	10	20	30	10	10	5	5													
		Difficulty	2	5	4	6	7	1	8	2	Overall			Science Inquiry Skills (SIS)			Scientific Understanding (SU)			Communication		
	Name	St Code	Criteria	SU - recall & explanation	SIS - display data	SIS - exp design	SU - recall, explanation	SU - maths	SIS display-interpret data	SIS - exp design, review	Comm	Total weighted	Total avg	Overall grade	SIS weighted	SIS avg	SIS grade	SU weighted	SU avg	SU grade	com weighted	Com avg	Com Grade
	Student 1	10001		7	6	11	7	3	15	10	12	850	9	C+	480	11	B	310	6	D+	60	12	B+
	Student 2	10002		10	9	11	11	6	11	14	14	1050	11	B	490	11	B	490	10	B-	70	14	A
	Student 3	10003		6	8	9	8	5	14	6	8	820	8	C	430	10	B-	350	7	C-	40	8	C
	Student 4	10004		12	11	12	8	8	12	6	14	1010	10	B-	500	11	B	440	9	C+	70	14	A
	Student 5	10005		11	9	1	9	6	10	6	12	740	7	C-	240	5	D	440	9	C+	60	12	B+
	Student 6	10006		5	4	5	7	10	9	6	5	645	6	D+	260	6	D+	360	7	C-	25	5	D
	Student 7	10007		13	8	9	6	8	13	6	12	870	9	C+	420	9	C+	390	8	C	60	12	B+
	Student 8	10008		8	7	8	6	7	6	4	8	680	7	C-	310	7	C-	330	7	C-	40	8	C
	Student 9	10009		0	6	9	9	5	9	8	6	720	7	C-	370	8	C	320	6	D+	30	6	D+
	Student 10	10010		3	3	6	6	6	9	5	6	565	6	D+	265	6	D+	270	5	D	30	6	D+
	Student 11	10011		12	12	13	11	14	13	4	0	1120	11	B	530	12	B+	590	12	B+	0	0	E-
	Student 12	10012		8	8	7	6	5	11	6	15	745	7	C-	360	8	C	310	6	D+	75	15	A+
	Student 13	10013		11	6	7	8	9	9	9	8	815	8	C	335	7	C-	440	9	C+	40	8	C
	Student 14	10014		12	12	13	10	8	7	3	8	1005	10	B-	465	10	B-	500	10	B-	40	8	C
	Student 15	10015		14	11	9	8	4	11	6	12	910	9	C+	430	10	B-	420	8	C	60	12	B+
	Student 16	10016		2	6	3	8	4	3	3	6	495	5	D	165	4	D-	300	6	D+	30	6	D+
	Student 17	10017		8	6	10	5	4	8	6	8	680	7	C-	370	8	C	270	5	D	40	8	C
	Student 18	10018		7	5	7	7	6	11	9	12	745	7	C-	345	8	C	340	7	C-	60	12	B+
	Student 19	10019		14	11	11	10	12	14	6	8	1100	11	B	500	11	B	560	11	B	40	8	C
	Student 20	10020		14	14	14	7	12	14	1	5	1060	11	B	565	13	A-	470	9	C+	25	5	D
	Student 21	10021		11	8	11	9	9	12	6	14	990	10	B-	450	10	B-	470	9	C+	70	14	A
	Student 22	10022		11	9	9	11	14	11	5	6	1015	10	B-	405	9	C+	580	12	B+	30	6	D+
			Count	*22*	*22*	*22*	*22*	*22*	*22*	*22*	*22*	*22*	*22*		*22*	*22*		*22*	*22*		*22*	*22*	
			Average	*9.05*	*8.14*	*8.86*	*8.05*	*7.50*	*10.55*	*6.14*	*9.05*	*846.82*	*8.45*		*394.77*	*8.82*		*406.82*	*8.09*		*45.23*	*9.05*	
			St Dev	*4.01*	*2.83*	*3.24*	*1.79*	*3.25*	*2.92*	*2.71*	*3.85*	*179.94*	*1.87*		*103.37*	*2.34*		*98.87*	*2.09*		*19.24*	*3.85*	
			Median	*10.5*	*8*	*9*	*8*	*6.5*	*11*	*6*	*8*	*835*	*8.5*		*412.5*	*9*		*405*	*8*		*40*	*8*	

MarkBook | MarkBook - Gutman | gradelookup

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Student 22	10022		11	11	9	6	9	11	14	5	1015	10	B-	405	9	C+	580	12	B+	30	6	D+
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Student 8	10008		6	8	8	8	7	6	7	4	680	7	C-	310	7	C-	330	7	C-	40	8	C
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		Count	*22*	*22*	*22*	*22*	*22*	*22*	*22*	*22*	*22*	*22*		*22*	*22*		*22*	*22*		*22*	*22*	
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		Median	*11*	*10.5*	*9*	*8*	*8*	*8*	*6.5*	*6*	*835*	*8.5*		*412.5*	*9*		*405*	*8*		*40*	*8*	

Middle School Precinct

Design Principles.

The Middle School precinct (and associated completion of Junior School precinct on the bottom two levels) is designed around three main principles.

1. Community
   The building is very specifically designed around building a community, in the areas of pastoral care and academics.

   From a pastoral perspective, the Middle School has nine groups of three classrooms for the nine pastoral houses. Each group of three classrooms will be allocated to a house, and the year 7, 8 and 9 students of those house groups will meet in the rooms for all formal and informal pastoral care delivery. The rooms have glass divider screen between them, which can be opened to have a full house meeting venue. The lockers for the house are outside the rooms, and the housemaster's office is in the middle of the level, with site lines to the locker areas. As such, a very formalised sense of place has been developed for each pastoral group.

   The organisation for Academic delivery is overlayed with the pastoral model. For academic lessons, each level of the Middle School is for a year group, year 7 at the bottom and year 9 at the top. The nine classrooms then become home rooms for each of the year 9 academic class groups. By design, as many walls as possible are built from glass, making learning visible and central to the precinct, very different to the traditional "closed classrooms" found in most educational precincts.

2. Flexibility
   The building must be flexible in all areas, with every space having more than one use. Minimal fixed joinery and furniture will be used, so teachers and students are not locked into any one way of working. Technology must also be ubiquitous and flexible – gone are the days of a solely didactic classroom where a teacher stands in one place delivering a PowerPoint at students. Outdoor teaching spaces on each level will also encourage flexible and relevant delivery for students.

3. Sustainability
   Brisbane Boys' College has a sustainability focus and the building must encourage sustainable habits and utilise appropriate strategies and technologies to minimise the environmental footprint. All energy use (and quality) will be monitored at a room level, segmented into lights, mechanical and fans. Water collection and use will also be monitored, along with environmental conditions. All data will be available in real time to all staff and students in the form of a heat mapped 3D model, allowing for the immediate impact of room based decision to be seen. Passive heating and cooling, along with hybrid and full air conditioning will be available, encouraging the most appropriate and energy efficient environmental controls to be used.

Teaching and Learning performance brief.

1. Room Design
   The rooms must be as empty as possible with minimal fixed furniture. Floor coverings must allow for easy movement of furniture, encouraging multiple room configurations. The "teacher" point is not to be fixed, with multiple points available for the teacher to centre themselves. Likewise, the student learning points must also not be fixed.

2. Modes of teaching and learning
   The rooms should allow for both instant and physical switching of teaching modes, from the traditional modes of didactic teaching and individual student work, to the more collaborative small group and large groups discussion (discursive) modes. Technology will be key to encouraging and enabling this.

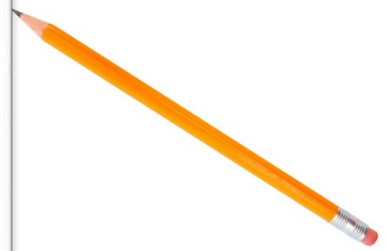
3. Furniture
   Furniture should be easily moved, on wheels or glides, allowing for multiple room configurations. Multiple room configurations should be designed, and these detailed ready for a teacher training program, focusing on the instant and physical switching of teaching and learning modes. The furniture must be "boy proof" both in construction and design. The furniture must encourage good ergonomics and be appropriate size for male students aged 12-18.

4. Technology
   The technology in the room must be ubiquitous and where possible invisible. At the most basic level it must work. From a use perspective, the rooms should contain the latest appropriate technological innovations, but not require high technology expertise to use. The initial room design will be around wireless access for students and teachers in a 1:1 tablet pc environment. In each room, five mobile touch screens (46-55") with computers (COWs, Computer On Wheels) will serve the both the students and the teachers, with wireless connectivity from the student and teacher machines to the screens. The teacher should be able to utilise these screens in five main ways (and instantly switch between these ways of working)

   a. Single large screen used by the teacher – this is very much the traditional "projector" mode, where all students focus on one screen and the teacher delivers content and instruction supported by this.
   b. Screens used by students – the students are able to connect to the screens to work as a small discussion group, collaborating around the screen controlled either by a student's machine or the on-board computer with the screen.
   c. Screen used by the teacher – the teacher controls all screens, projecting wirelessly the same content to all screens from their machine either in a didactic teaching mode, or using a stimulus media piece.
   d. Screen used by the teacher – the teacher controls all screens, projecting wirelessly different content to all screens in a differentiated teaching mode
   e. Screens used by the teacher – the teacher controls all screens, but mirrors the content from one student screen/machine to all for discussion.

5. All rooms will have a sound system and Red Cat passive sound augmentation.

1· Light
2·Air quality
3·Acoustics
4·Technology
5·Community
6·Formal
7·Informal
8·Modalities



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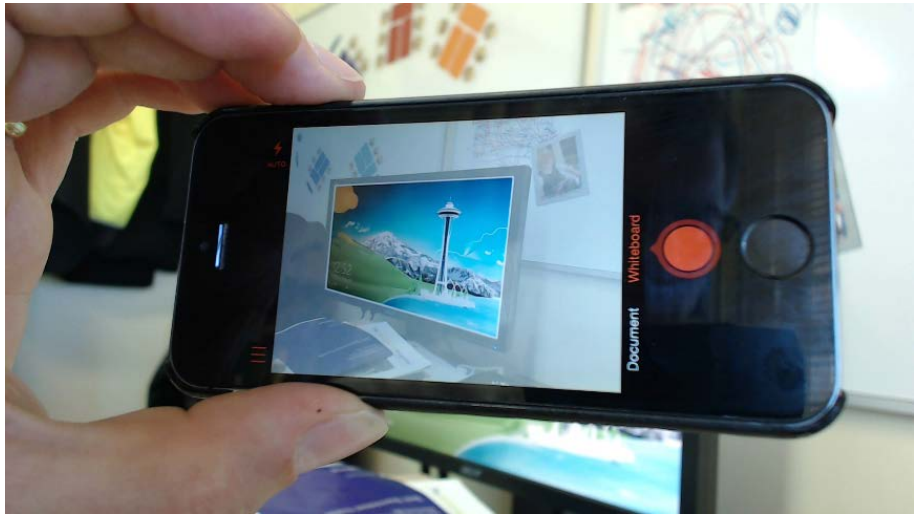
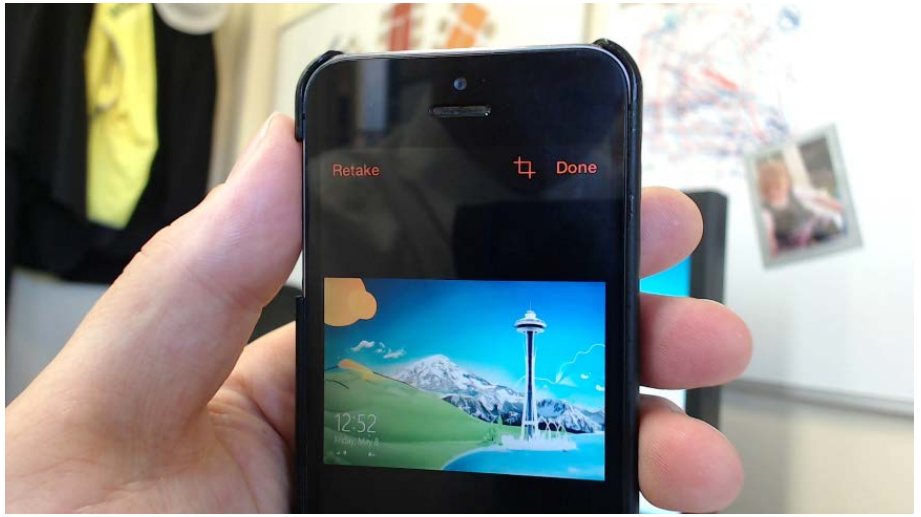
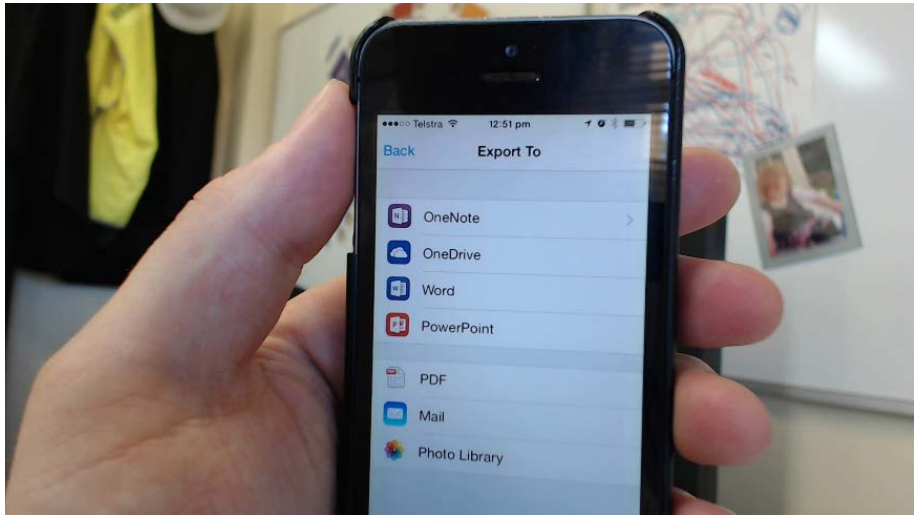
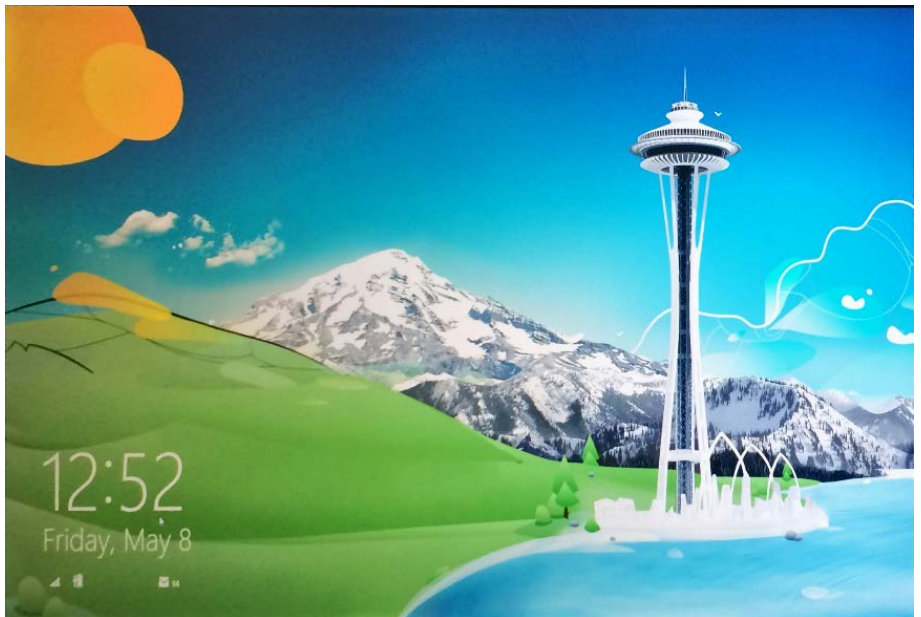
- Windows phone – http://www.windowsphone.com/en-au/store/app/office-lens/
- iOS – https://itunes.apple.com/app/office-lens/id975925059
- Android – http://aka.ms/officelensandroid



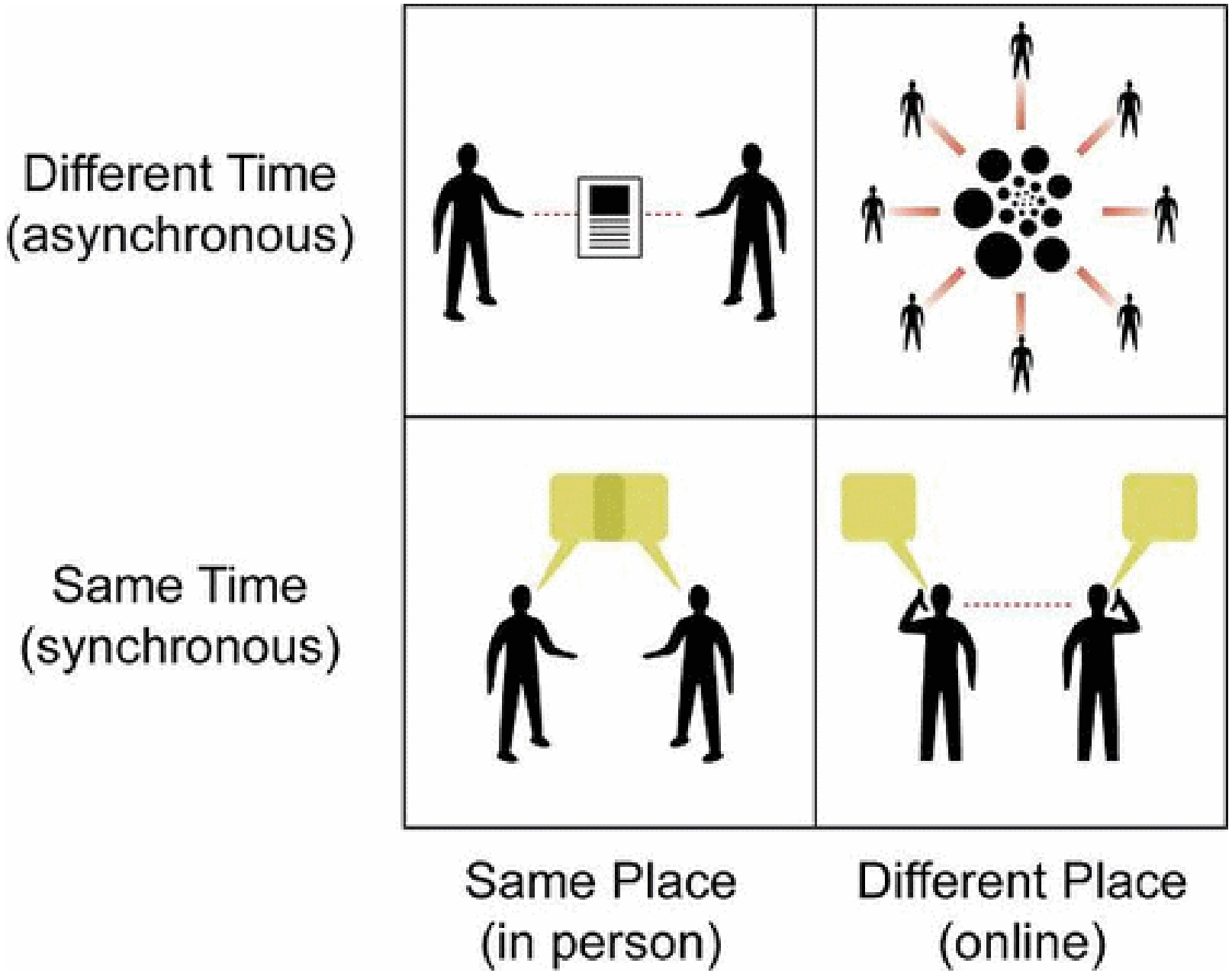






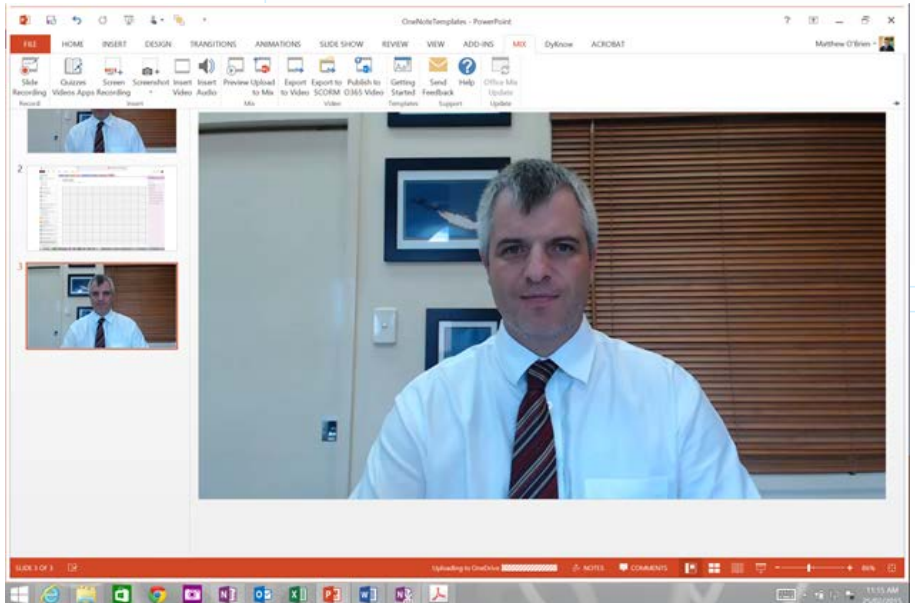
Elements 4D

- Live demo



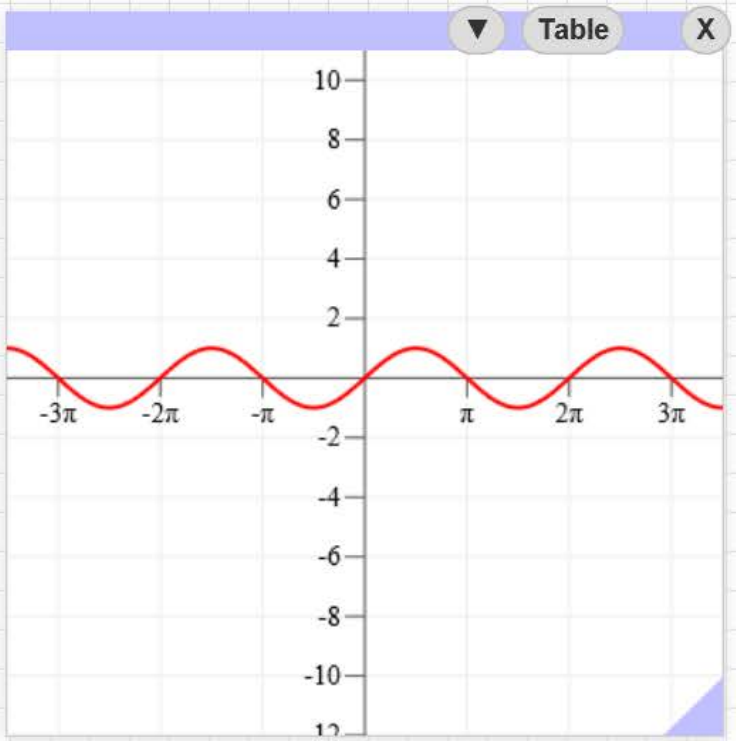
http://www.imedicalapps.com/wp-content/uploads/2012/05/synchronous-vs-asynchronous-.gif


4 Participants
Cascade and Munglinup are over 700km from Perth.
Kalgoorlie
PERTH
Fremantle
Bunbury
Busselton
Margaret River
Albany
Esperance
Norseman
Balladonia
Caiguna
Cocklebiddy
Madura
Mundrabilla
Eucla
Israelite Bay
Hyden
Narrogin
Wagin
Katanning
Hopetoun
Ravensthorpe
Lake Grace
Merredin
Corrigin
Lancelin
Eneabba
Jurien
Moora
Denmark
Mt Barker
Walpole
Caversham
Guest
ema
Guest
Tara Walter
Guest
Michael Valentine


Record
Stop
Previous Slide
Previous Animation
Next Animation
Next Slide
Preview Slide Recording
Delete Slide Recording
Slide Notes
Full Screen
Close
Record
Navigation
Recording Tools
Notes
No slide notes.
Audio and Video
Thumbnail
Full Screen
Logitech HD Pro Webcam C9
Microphone (Yeti Stereo Micr
Inking
Audio for voice (noise reduction and auto-adjust volume)
Record HD video (not for web)
Ok
Cancel
1
2
4

$$y = \sin(x)$$

$y = \sin(x)$



ChemPad 3

File Options Help

Ink Mode:

Chemistry

Annotation

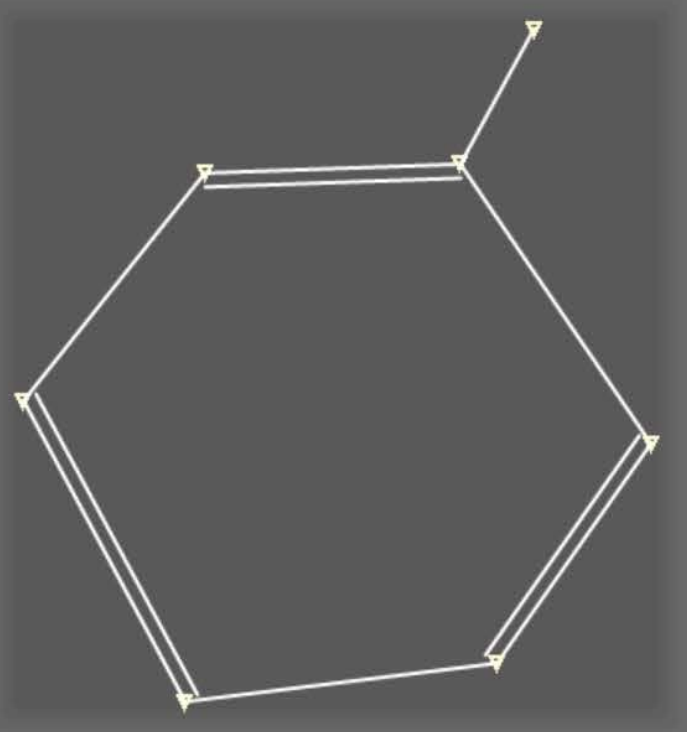
Shortcuts:

Clear All

Panels:

Ink Panel

C7H8

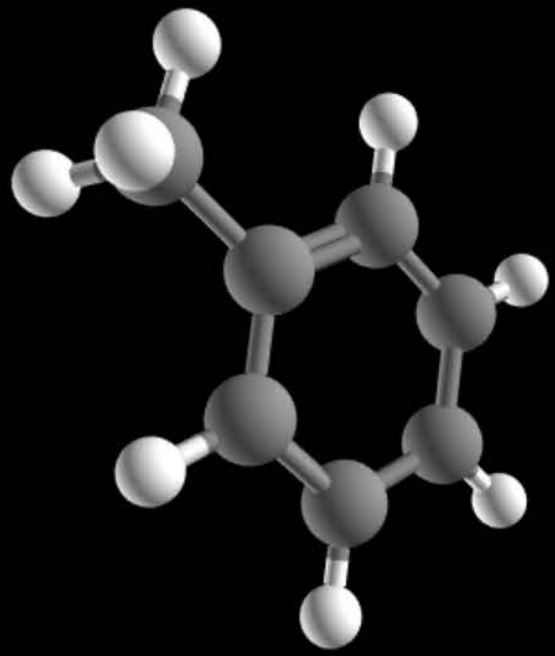


C7H8

Appearance Data Alternates

Zoom Max

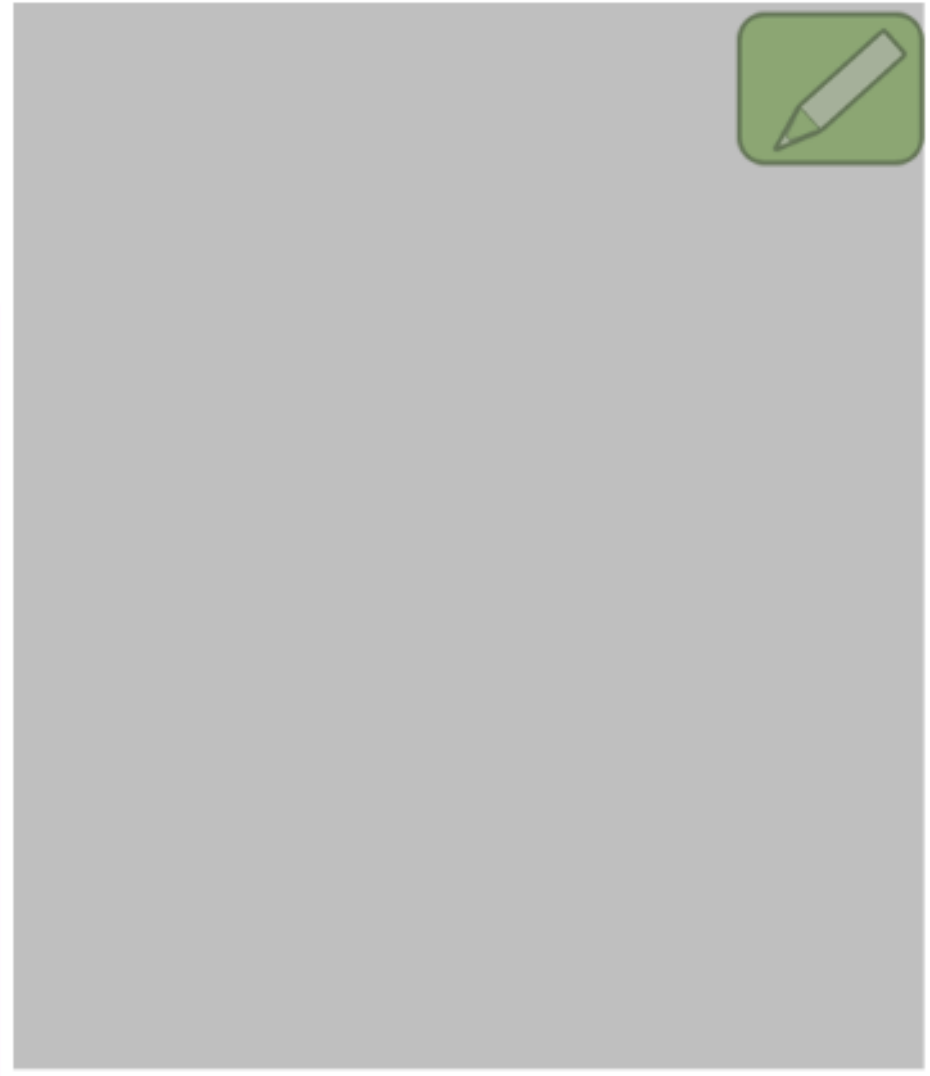
Zoom Min




MOTORWAY
UPGRADE
NEXT 8 KM

Use $\Delta H = mC\Delta T$ to determine the ΔH of a reaction with the following results:

- Initial mass of item burnt = 235.9g
- Final mass of item burnt = 1.7g
- Mass of water = 345.2g
- Initial water temp = 10.2 ^{o}C
- final water temp = 65.2 ^{o}C
- *specific heat of water = 4.184 J/g^{o}C*



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- final water temp = 65.2 ^{o}C
- *specific heat of water = 4.184 J/g^{o}C*

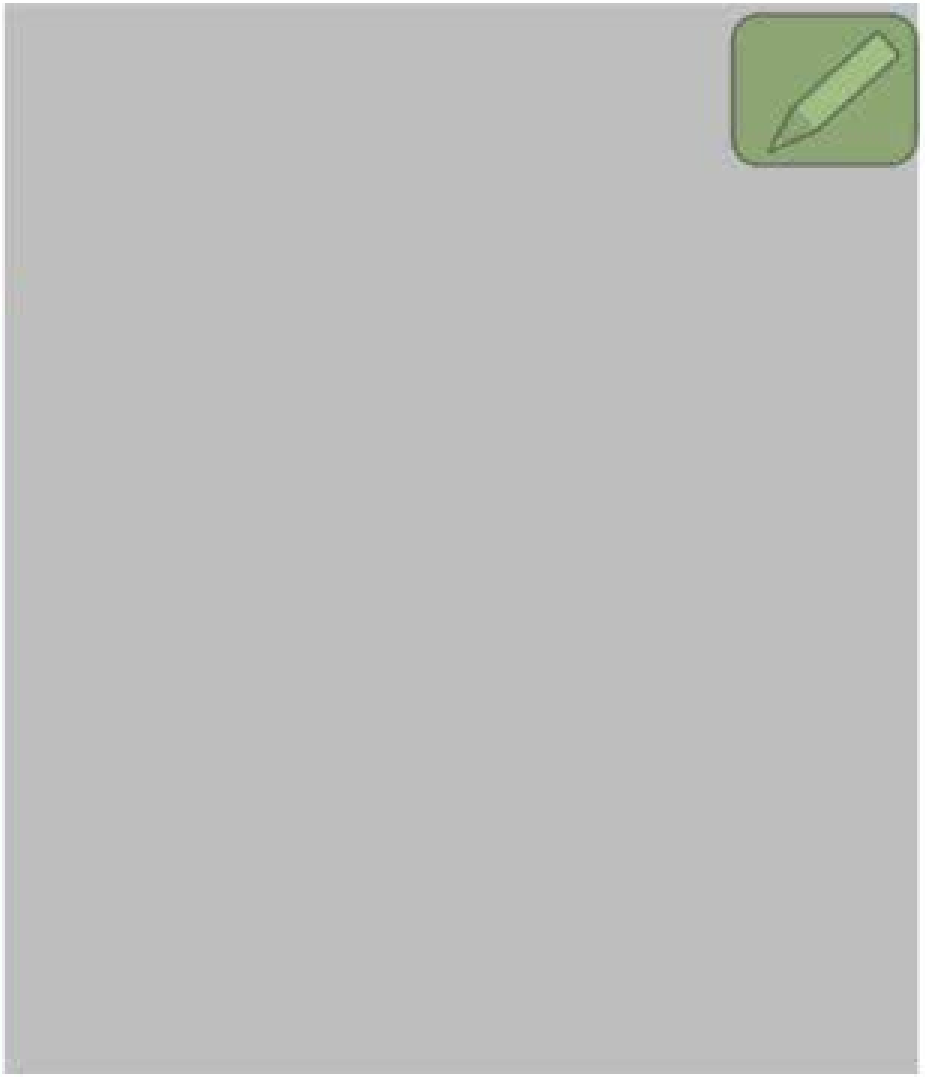
Teacher space
(I promise I WILL write here)

Student space
(I promise I WON'T write here)

Reflection space
(What do you need to do next time)
(What did you learn)

Use $\Delta H = mC\Delta T$ to determine the ΔH of a reaction with the following results:

- Initial mass of item burnt = 235.9g
- Final mass of item burnt = 1.7g
- Mass of water = 345.2g
- Initial water temp = 10.2 ^{o}C
- Final water temp = 65.2 ^{o}C
- *specific heat of water = 4.184 J/g^{o}C*



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- *specific heat of water = 4.184 J/g^{o}C*

$\Delta H = MC\Delta t$

$M = 345.2 + 1.7 + 235.9$

$= 582.8g$

$\Delta t = 10.2 - 65.2$

$= -55°C$

$C = 4.184 J/g°C$

$\Delta H = 582.8g \times 4.184 J/g/°C \times -55°C$

$\Delta H = -134113.936 J$

$= -134.114 KJ$ Exothermic

Use $\Delta H = mC\Delta T$ to determine the ΔH of a reaction with the following results:

- Initial mass of item burnt = 235.9g
- Final mass of item burnt = 1.7g
- Mass of water = 345.2g
- Initial water temp = 10.2 °C
- Final water temp = 65.2 °C
- *specific heat of water = 4.184 J/g°C*

$\Delta H = mC\Delta T$

$m(H_2O) = 345.2g$

$C = 4.184\ J/g \cdot °C$

$\Delta T = initial - final$

$= 10.2°C - 65.2°C$

$= -55°C$

sub in values

$\Delta H = 345.2g \times 4.184\ J/g \cdot °C \times -55°C$

$= -79437\ J$

OR

$-79.4\ kJ$

$\Delta H = mC\Delta t$

$M = 345.2$

$\Delta t = 10.2 - 65.2$

$= -55°C$

$C = 4.184\ J/g°C$

$\Delta H = 345.2g \times 4.184\ J/g°C \times -55°C$

$\Delta H = -79437.424$

$= -79.4\ kJ$ Exothermic

What is one thing you are going to do as a result of this presentation?

What is your classroom of the future going to look like?

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