Online Education post COVID

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Agenda

- What we know
- My assumptions
- What we know and don't know (and what worries me)
- What we could do
- What might actually happen

What we know

- COVID continues to spread around the world
- https://www.worldometers.info/coronavirus/
- Virtually every government has introduce some sort of lockdown approach
- Vaccines are relatively close, but unproven n the population and scale is difficult
- WAG – large-scale effects until at least end 2021
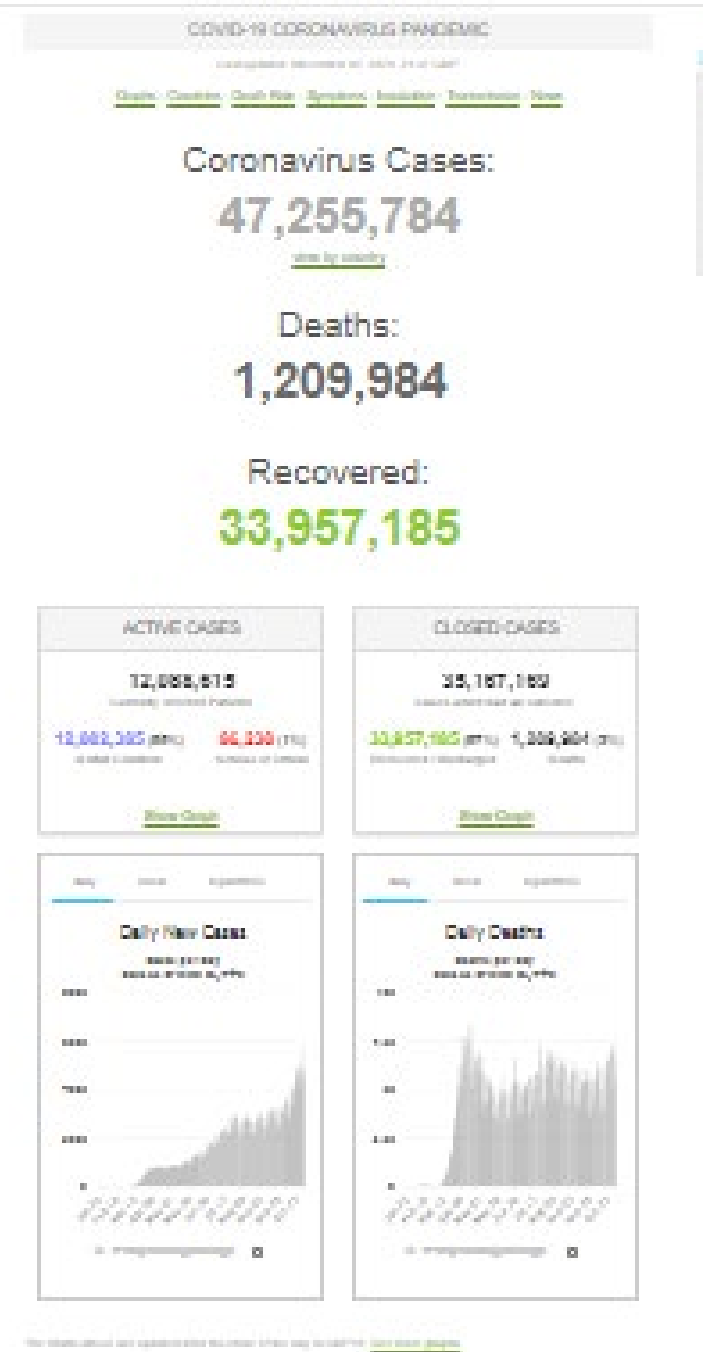
The world

- Effectively since the Internet, all human knowledge is available immediately (in English at least), effectively for free.

- Internet access is still patchy for poorer people , (20% of low income earners don't have access) h[ttps://www.digital.govt.nz/dmsdocument/161~digital-inclusion-and-wellbeing-in-new-zealand/html#3.-data](https://www.digital.govt.nz/dmsdocument/161~digital-inclusion-and-wellbeing-in-new-zealand/html#3.-data)

- Lots of information about search (commercial) https://www.social4retail.com/how-people-search-the-internet-2018-infographic.html

- Pre COVID Around a 1/3rd of US students took at least 1 online course with around 15% fully online https://www.insidehighered.com/digital-learning/article/2018/11/07/new-data-online-enrollments-grow-and-share-overall-enrollment
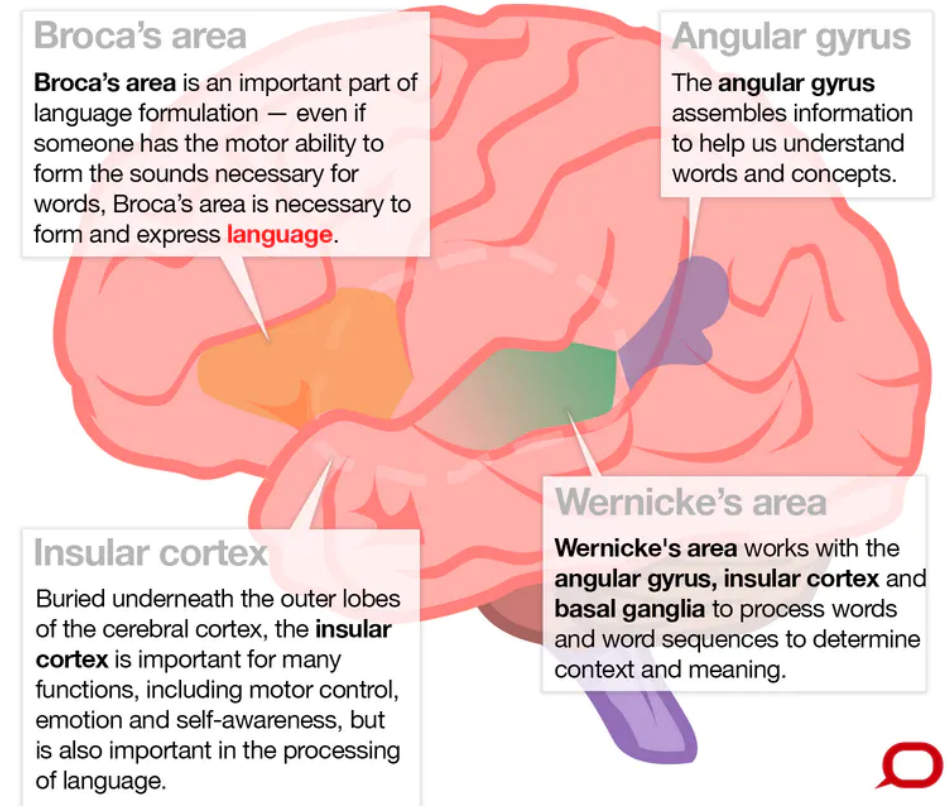
Responses

- Education establishments shut
- Students have low risk, but are great at spreading infections
- International student flows effectively stopped
- Online and distance teaching and learning introduced VERY rapidly

My assumptions (non- controversial)

- Education changes your brain
- Education is a social process
- Speech and language are very important brain areas
- Time available to do things is finite
- Lots of people go to university
- Learning is hard work

Broca's area

Broca's area is an important part of language formulation — even if someone has the motor ability to form the sounds necessary for words, Broca's area is necessary to form and express **language**.

Angular gyrus

The **angular gyrus** assembles information to help us understand words and concepts.

Insular cortex

Buried underneath the outer lobes of the cerebral cortex, the **insular cortex** is important for many functions, including motor control, emotion and self-awareness, but is also important in the processing of language.

Wernicke's area

Wernicke's area works with the **angular gyrus, insular cortex** and **basal ganglia** to process words and word sequences to determine context and meaning.

Things that worry me

- Why doesn't everyone just do free online courses ?

- Are universities just certification and validation systems ?

- Is there something special about face-to-face or is it just habit ?

Modes of online learning

- Synchronous – e.g. Teams/Zoom

- Asynchronous – e.g. Panopto/email/PowerPoint/videos etc.

- Combined approaches common

- Different arrangements:
  - Many students 1 teacher e.g. lecture
  - 1 student – 1 teacher e.g. tutorial/office hour
  - Student-student –e.g. project groups

- Material up first, discussion after (flipped)

Assessments

- Lots of different "assignment " types

- No way to fully control assessment

- In terms of control (most to least)
  - Viva
  - Online posting/conversation
  - Timed assessment e.g. quiz, novel task
  - Assignments
  - Non-timed exam

MOOCs

- Very trendy 2010-5

- Going to make education accessible to all, cheap, flexible etc.

- What happened ->

Consistently low retention and recent enrollment declines
Year-to-year enrollment of learner cohorts defined by their year of first activity. Parenthesis shows percentage retained from initial cohort size.

Registration year
- 2012–2013
- 2013–2014
- 2014–2015
- 2015–2016
- 2016–2017
- 2017–2018
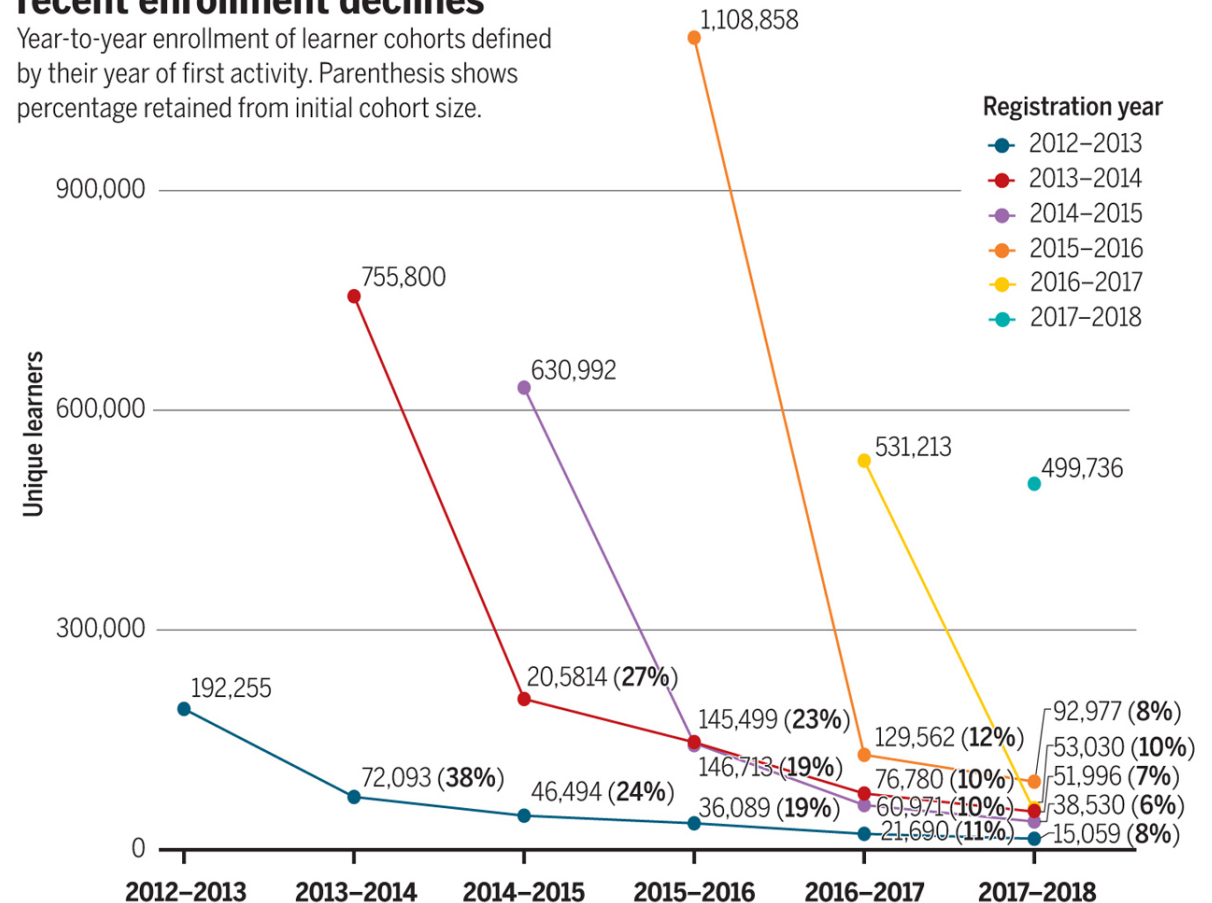
The MOOC pivot
Justin Reich, José A. Ruipérez-Valiente Science 11 Jan 2019:Vol. 363, Issue 6423, pp. 130-131
DOI: 10.1126/science.aav7958
https://science.sciencemag.org/content/363/6423/130

What's wrong with MOOCs?

- Not a massive (!) amount of evidence but one study(Topali, Paraskevi, et al. "Exploring the problems experienced by learners in a MOOC implementing active learning pedagogies." *European MOOCs Stakeholders Summit*. Springer, Cham, 2019.)

- People who completed MOOCs found student-student collaboration difficult, People who didn't found they didn't have enough time.
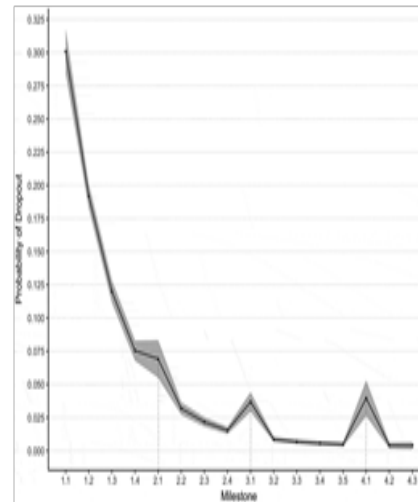
https://link.springer.com/chapter/10.1007/978-3-030-19875-6_10
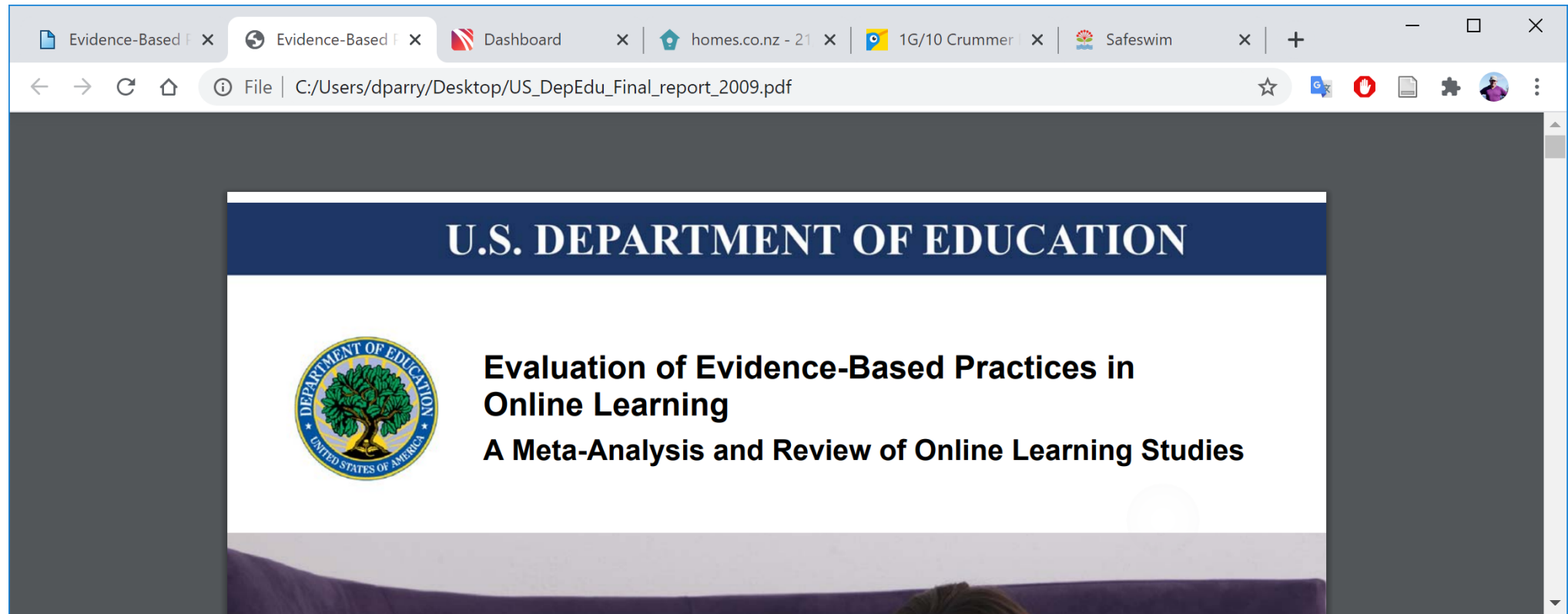
Why ?

Going over the cliff: MOOC dropout behavior at chapter transition
Chen Chen , Gerhard Sonnert, Philip M. Sadler, Dimitar D. Sasselov, Colin Fredericks & David J. Malan
https://doi.org/10.1080/01587919.2020.1724772

Evidence !

Summary

- Interaction is good
- Asynchronous is good
- Media doesn't matter
- More time is good
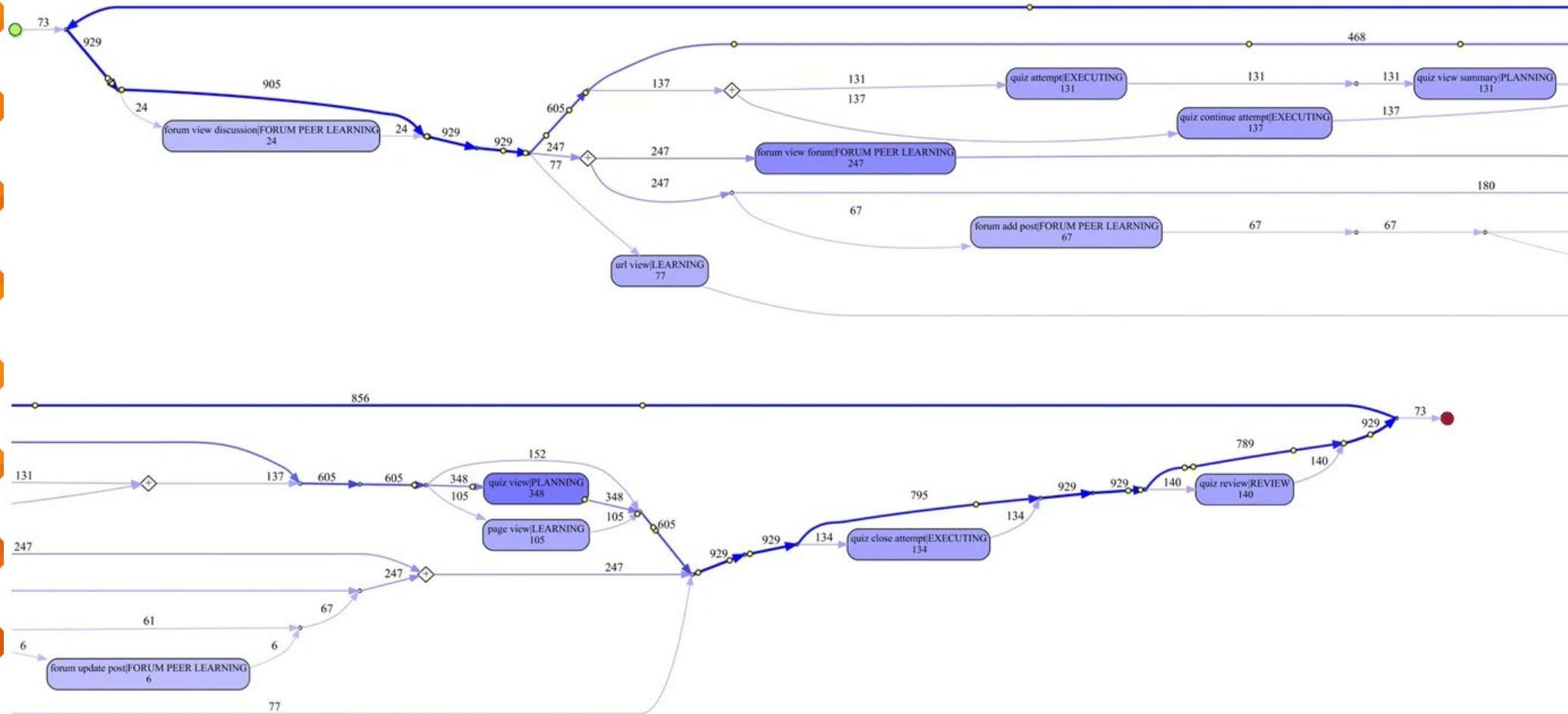- Some face to face helpful
- Practicing tests is helpful

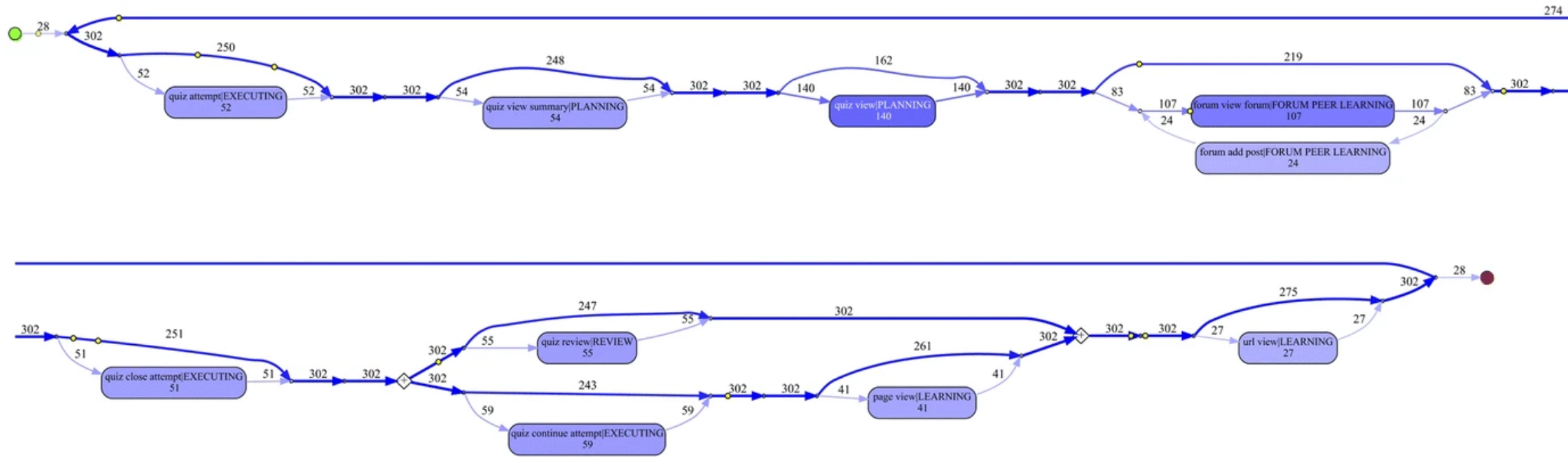| Variable	Contrast	Number Studies	Weighted Effect Size	Standard Error	Lower Limit	Upper Limit	Q-Statistic
Pedagogy/learning experience[a]	Instructor-directed (expository)	8	0.363**	0.115	0.138	0.588	3.03
	Independent (active)	17	0.145	0.077	-0.005	0.296	
	Collaborative (interactive)	23	0.283***	0.070	0.146	0.419	
Computer-mediated communication with instructor [a]	Asynchronous only	16	0.305***	0.095	0.120	0.491	0.97
	Synchronous + Asynchronous	9	0.153	0.123	-0.089	0.394	
Computer-mediated communication with peers[a]	Asynchronous only	17	0.268***	0.079	0.113	0.422	0.13
	Synchronous + Asynchronous	7	0.321**	0.125	0.076	0.567	
Treatment duration[a]	Less than 1 month	19	0.227**	0.082	0.066	0.389	0.07
	More than 1 month	30	0.255***	0.063	0.132	0.378	
Media features[a]	Text-based only	15	0.281**	0.100	0.086	0.477	0.13
	Text + other media	32	0.239***	0.060	0.121	0.357	
Time on task[a]	Online > Face to Face	10	0.461***	0.110	0.246	0.676	3.88*
	Same or Face to Face > Online	17	0.189*	0.084	0.025	0.353	
One-way video or audio	Present	15	0.118	0.082	-0.043	0.279	3.62
	Absent/Not reported	36	0.308***	0.057	0.196	0.421	
Computer-based instruction elements	Present	30	0.263***	0.061	0.144	0.382	0.20
	Absent/Not reported	21	0.220**	0.077	0.069	0.371	
Opportunity for face-to-face time with instructor	During instruction	21	0.277***	0.069	0.142	0.411	0.37
	Before or after instruction	12	0.220*	0.108	0.009	0.431	
	Absent/Not reported	18	0.217*	0.086	0.047	0.386	
Opportunity for face-to-face time with peers	During instruction	21	0.274***	0.068	0.141	0.408	0.94
	Before or after instruction	13	0.160	0.102	-0.040	0.359	
	Absent/Not reported	17	0.266**	0.089	0.091	0.442	
Opportunity to practice	Present	42	0.264***	0.052	0.161	0.366	0.65
	Absent/Not reported	9	0.159	0.118	-0.072	0.391	
Feedback provided	Present	24	0.248***	0.072	0.107	0.388	0.00
	Absent/Not reported	27	0.247***	0.065	0.118	0.375	

Background (people) factors

- Self regulation is **more** important for online learning i.e. learners need to manage their learning.

- Online is "anywhere anytime" - but this can cause difficulties

- Different behaviours can lead to success or failure

- Not everyone is the same

How to pass

Cerezo, R., Bogarín, A., Esteban, M. et al. Process mining for self-regulated learning assessment in e-learning. J Comput High Educ 32, 74–88 (2020). https://doi.org/10.1007/s12528-019-09225-y

How to fail

Simplified

- Trying the examples without reading and discussion is bad, even if you subsequently do read nots and discuss

- Discuss/read/try and repeat seems better

- Strategies matter.

Some (other) examples

Enablers
- Theme 1. Facilitate learning
- Theme 2. Learning in practice
- Theme 3. Systematic approach to learning
- Theme 4. Integration of e-learning into curricula

Barriers or challenges
- Theme 5. Poor motivation and expectation
- Theme 6. Resource-intensive
- Theme 7. Not suitable for all disciplines/contents
- Theme 8. Lack of IT skills

Regmi, Krishna, and Linda Jones. "A systematic review of the factors–enablers and barriers–affecting e-learning in health sciences education." *BMC medical education* 20 (2020): 1-18.

Summary

- The most important aspect is self-regulation by the student –
  - Take responsibility
  - Understand what works for you
  - Plan
  - Work hard
  - Discuss with others
- Obviously, this is motherhood and apple pie but
  - Feedback
  - Well outlined course eg timetable etc.
  - Availability of discussion
  - Reflection/diary etc.
- Media and other aspects much less important

Other stuff

- Videos – how long ?
  - Short is best for Males (6mins) and people with learning disabilty

Middle-Level Flipped Science Setting: Implications for Diversity Inclusion. *J Sci Educ Technol* **27,** 469–479 (2018). https://doi.org/10.1007/s10956-018-9736-2

- Student views about emergency online learning

Unger, Shem, and William Meiran. "Student attitudes towards online education during the COVID-19 viral outbreak of 2020: Distance learning in a time of social distance." *International Journal of Technology in Education and Science* 4.4 (2020): 256-266.

- Students overwhelmingly thought online was different and even after a few weeks about half still felt anxious about it

What worries me

- We don't really know how to encourage and teach self-regulation and this is MORE important for online

- People who can't do this will quite possibly fail

- Videos etc. should be short – should we be making them at all ?

- Feedback, discussion and planning are really important -> need lots of assessment opportunities

- Technology doesn't matter as long as it works

What we could do

- Split information into bite-sized chunks and curate youtube etc. But really don't worry too much about polishing teaching materials

- LOTS of feedback and availability (peer tutors ?)

- CONTINUALLY encourage discussion

- ACCEPT that this produces anxiety

- LOOK at ways to increase self-regulation

- IDENTIFY people who are not doing well - analytics

Traps

- More and more effort on teaching materials

- Less assessment opportunities

- Less communication

- Students getting lost

- Burnout in terms of feedback.

Wrap -up

- Letting students "just get on with it" is not going to work
- Drop-out rates will rise
- Reassurance, availability and feedback very important
- Structure, timing, self-tests and assessments
- Fancy materials don't matter
- Analytics and identification of failing students do matter
- Building self-regulation is crucial
- Communication between students and students and staff is a key task