Campbell Five Reasons You shouldn't use technology in the classroom

The users of tech are treated like rock stars at conferences; non-users with disdain.

Privacy and Security – leaks from class dojo, edmodo, etc.

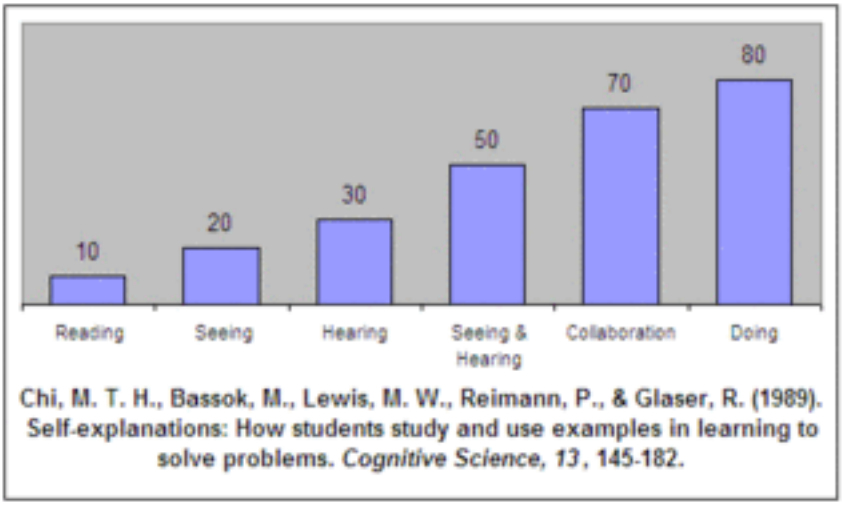
Branding A "connected classroom" is a much more corporate environment than an "unconnected classroom" Google, McGuinty D2L, First Class, ABC Ed Tech, etc

Equity: 38% of low-income families don't have internet access ; digital divide made worse by BYOD policies;

Changes in teaching: Experienced teachers better at using tech bc they have better classroom mgmt. skills. They recognize kids as not so tech savvy; rec need for digital literacy

Tech infrastructure: availability (have and have not schools; inequitable roll-outs of tech ie wealthy area school gets iPads first. WHY?) TV TEST: TV's are ubiquitious and work immediately 99.9% of the time. When ed tech becomes this ubiquitous and reliable, we'll have achieved something.

Tralheimer: People Remember 10%, 20% …oh Really?

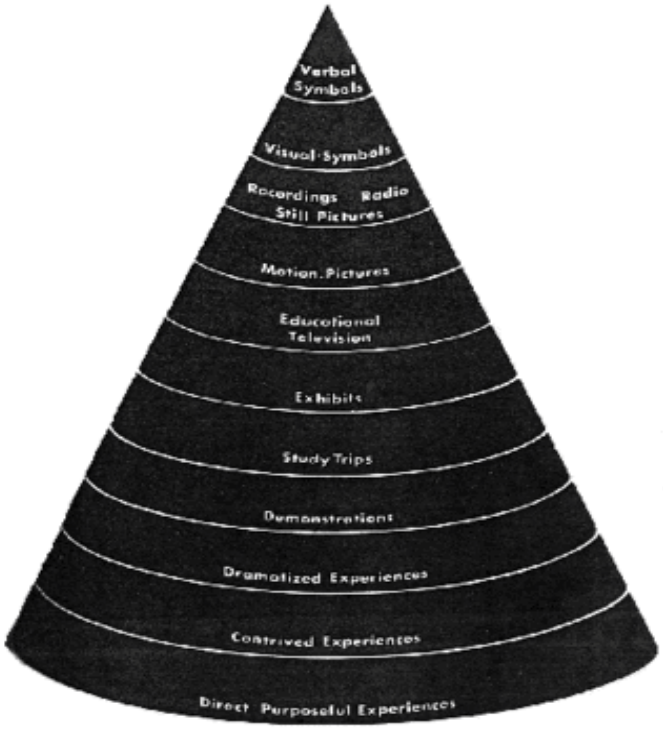


Chi, M. T. H., Bassok, M., Lewis, M. W., Reimann, P., & Glaser, R. (1989). Self-explanations: How students study and use examples in learning to solve problems. *Cognitive Science, 13*, 145-182.

This graph is bullshit. Contacted author of cited article, who said: *I don't recognize this graph at all. So the citation is definitely wrong; since it's not my graph."*

Fraudulent bogus data is a widespread problem: The numbers presented on the graph have been circulating in our industry since the late 1960's, and they have no research backing whatsoever

Started with Edgar Dale's cone of experience: 1946, NO numbers. Some time after 1969 starts to appear with numbers:



Verbal Symbols

Visual Symbols

Radio, recordings, pictures

Motion pictures

TV

Exhibits

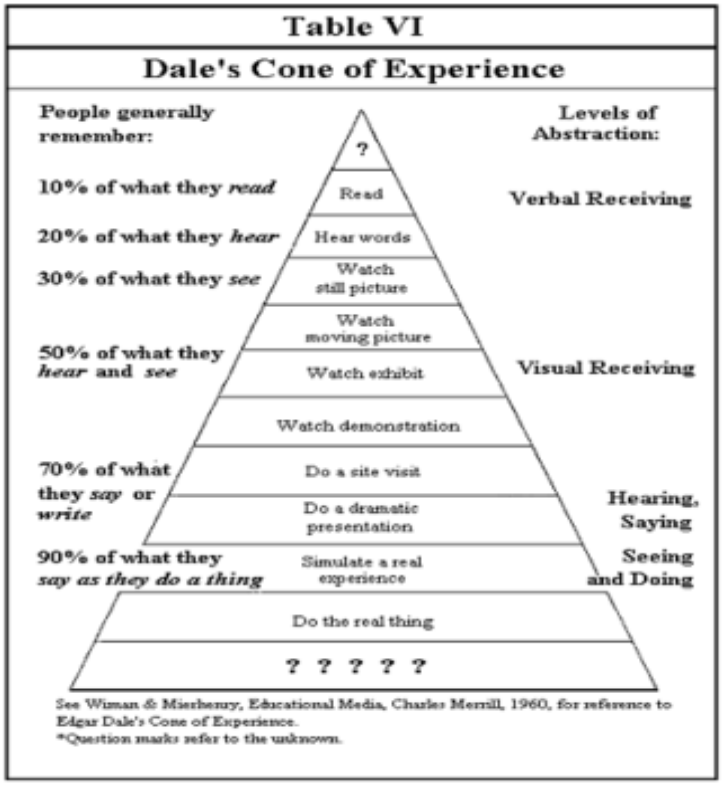
Study Trips

Demonstrations

Dramatizations

Contrived Experiences

Direct Purposeful Experiences



The bogus percentages were first published by an employee of Mobil Oil Company in 1967, writing in the magazine *Film and Audio-Visual Communications*. D. G. Treichler didn't cite any research, but our field has unfortunately accepted his/her percentages ever since

The numbers are not credible, and even if they made sense, they'd still be dangerous.

Tralheimer expanded on this in the next post, a review of research in 2014.

Tralheimer Mythical Retention Data and the Corrupted Cone

*useful to check blog for all versions of the diagram that are out there. Eye opening.

there is no body of research that supports the data presented in the many forms of the retention chart.
people have relied on research citations from 1943, 1947, 1963, and 1967 as the defining research when they cite the source of their data; the numbers—10%, 20%, 30% and so on actually appeared as early as 1914 and 1922—when they were presented as information long known.
the fact that the numbers all are divisible by 5 or 10 makes it obvious to anyone who has done research that these are not numbers derived by actual research.

Excerpts:

There is within educational psychology a voluminous literature on remembering and learning from various mediated experiences. Nowhere in this literature is there any summary of findings that remotely resembles the fictitious retention chart.

The root of all the perversions of the Cone is the assumption that the Cone is meant to be a prescriptive guide. Dale definitely intended the Cone to be descriptive—a classification system, not a road map for lesson planning

Google Search in 2014 revealed 11,000 hits for 'Dale's Cone,'*14,500 for* 'Cone of Learning,' *and 176,000 for* 'Cone of Experience.' *And virtually all of them are corrupted or fallacious representations of the original Dale's cone. It just might be the most widespread pedagogical myth in the history of Western civilization!*

Among Tralheimer's Conclusions:

1. Authors of these bogus examples do not do their due diligence in confirming the validity of their research sources. They blithely reproduce sources or augment them before conveying them to others.
2. Consumers of these bogus information sources do not do their due diligence in being skeptical, in expecting and demanding validated scientific information, in pushing back against those who convey weak information.
3. Those who stand up publically to debunk such misinformation—though nobly fighting a good fight—do not seem to be winning the war against this misinformation

Tralheimer's Suggestions to teachers:

1. Be skeptical.
2. When conveying or consuming research-based information, check the actual source. Does it say what it is purported to say? Is it a scientifically-validated source? Are there corroborating sources?

3. Gently—perhaps privately—let conveyors of bogus information know that they are conveying bogus information. Show them your sources so they can investigate for themselves.
4. When you catch someone conveying bogus information, make note that they may be the kind of person who is lazy or corrupt in the information they convey or use in their decision making.
5. Punish, sanction, or reprimand those in your sphere of influence who convey bogus information. Be fair and don't be an ass about it.
6. Make or take opportunities to convey warnings about the bogus information.
7. Seek out scientifically-validated information and the people and institutions who tend to convey this information.
8. Document more examples.

Toward point 8, he directs us to: https://sites.google.com/site/thecorruptedconeoflearning/

The Growth Mindset: Telling Penguins to Flap Harder?

Summary

- The notion of "Talent = hard work + persistence" is incorrect

  Can't ignore Nature part: "Talent = Genes*(hard work + persistence)"; Adoption and twin studies have largely informed the conclusion that significant amounts of ability are inherited

  Nurture matters too: higher socioeconomic status enables advantages in many ways – psychological and physiological, i.e. vocabulary, stimulation inside and outside the home, diet, parental encouragement, early reading and so on. So perhaps it's Talent = (Genes + socio-economic background)*(hard work + persistence)

  if the growth mindset theory holds, then logically we would have to accept that the lower your socio-economic background, the more "fixed" your mindset, while the students with the "growth mindsets" all happen, coincidentally, to be from richer households. That seems unlikely given that we're talking about an attitude of mind here.

- Dweck's careful research is metamorphosing in the hands of others into a vacuous slogan
- Ability, or talent, is significantly constrained by factors external to the student
- These disadvantages cannot always be overcome

Quote: To a certain extent, I feel the growth mindset is the equivalent of putting a penguin next to an eagle and inviting them to both take off. When the eagle is a speck in the sky, the observer then tells the penguin that the only reason it isn't also flying is that it isn't putting enough effort in. If only it flaps its wings harder, it'll be chasing the eagle in no time. At which point, I hope the penguin regurgitates fish into the silly observer's face. It's not a lack of a positive attitude which prevents the penguin from flying, it's a lack of wingspan !

- An education system which refuses to recognise these disadvantages punishes children, teachers and schools unjustly

  i.e., if it's all about growth mindset, when the least able student and most able student don't close the gap between them (after all, it's about mindset and hard work, right?) then it's the teacher's fault. Misinterpreting Dweck is bad news for us.

- The "Talent = hard work + persistence" version of the growth mindset is very useful for sociopaths

  > Those who achieve great success in life tend to downplay the role of external circumstances in helping them reach the top; i.e. often see very wealthy people "emphasising how with hard work and persistence they overcame great disadvantages which clearly seem very real to them, even if the burden of attending only a minor public school, and having one of the ten family businesses go through a sticky patch, doesn't necessarily seem like a great disadvantage to the rest of us."
  >
  > "Growth Mindset" feeds very nicely into that self-delusion: "I am successful, therefore I worked hard; you are not as successful, therefore you cannot have worked as hard", which rapidly becomes "I deserve everything I have; you deserve nothing".

- "Growth Mindset" is potentially the next "learning styles" or "progress in each lesson" fad

Meeks: Student-centred learning is a joke

Interesting quote: "It is foolish and silly for professionals in any field to put in the time to comply with directives that will only give way to something else the next week, month or year. This capricious and arbitrary leadership, in my opinion, is abusive and would not be tolerated in any other sectors of employment."

Hendrick: The Scourge of Motivational Posters & Pop-Psych in the classroom

Sees application of GM in schools as trite, i.e. posters, failure walls.

Sees Growth Mindset as an oversimplification, unable to fix complex underlying problems. In fact thinks it has got it backwards – achievement boosts self-image, not vv. (Cites **Guay, Marsh, Boivin** study to support this)

Daniel Muijs and David Reynolds book cited too: "At the end of the day, the research reviewed shows that the effect of achievement on self-concept is stronger that the effect of self-concept on achievement."

"Firstly, student self-concept is both multi-dimensional and hierarchal. (Marsh et al.,1983; Muijs 1997) A student might have a very positive concept of self in English but a very negative one in Maths. Secondly student self concept is both academic and non-academic and can be broadly categorised into seven subareas such as physical ability/appearance and peer relations as well as academic ability (Shavelson, 1986.) So tying to manipulate these domain specific issues through 'all-purpose' positive interventions attempting to boost general self esteem are likely to be ineffective."

Christodoulo: Why 21st Century skills are not that 21st Century

"Whenever I hear anyone talk about preparing students for the 21st century, I am always sceptical. Partly this is because it is never made clear exactly what is so different about the 21st century that requires such different preparation…Mycenaean Greek craftsmen had to work with others, adapt and innovate. It is quite patronising to suggest that no-one before the year 2000 ever needed to think critically, solve problems, communicate, collaborate, create, innovate or read."

Author sees "21st Century Skills" as an attack on knowledge: i.e. She cites frequent claims that because information is being generated at a rate never before seen in human history, due to technology, what first year university students learn will be obsolete by fourth year. Simply false. New info doesn't wipe out old info; most often expands, builds on it.

Also dislikes the "just google it" school of thought that downplays knowledge and direct instruction. See Hirsch.

Cites studies that all confirm that Long term memory is not simply a warehouse, but that it is the crucial foundation for all cognition.

"thinking well requires knowing facts, and that's true not just because you need something to think about*. The very processes that teachers care about most – critical thinking processes such as reasoning and problem solving – are intimately intertwined with factual knowledge that is stored in long-term memory (not just found in the environment)"*

Hirsch: You can always look it up

Reflects on his own experience in a 'progressive' school that had students out of regular classes (to not make them "victims of rote learning") but participate in two projects – a drama production and a science project, all year.

Cognitive psychology upholds that it "takes knowledge to build knowledge", so the 'look it up' attitude is a paradox: de-emphasizing knowledge makes kids less able to access knowledge. Expert-Novice studies in CP field prove that those with bkgd knowledge actually do find other information much more readily, in less time, with much less frustration. It's a Catch 22 of sorts: you already need to know something about a topic in order to look it up effectively.

Touches on data from socioeconomic studies: higher socec standing kids had better vocabulary entering school; exposed to same lessons, they still outperformed the lower socec kids.

Discusses how progressive proponents

- dismiss direct teaching as rote, when it clearly can take many forms
- treat facts as inert, which is direct contradiction to their assertion that info is constantly being altered, generated.
- Ignore ample cognitive psych research upholding that knowledge builds on knowledge: "The more you know, the more readily you can learn something new, because you have a lot more analogies and points of contact for connecting the new knowledge with what you already know. Another way of stating this is simply to say that the more you know, the smarter you are. Our students become more intelligent when they know more. So does everybody. Researchers have been telling us this fact about human intelligence for many years. Intelligence increases with knowledge. General knowledge is the best single tool in a person's intellectual armory"

Hendrick: McNamara Fallacy and the problem of Numbers in Education

McNamara was secretary of defense during Vietnam War; saw war just in terms of numbers – body counts, to judge 'success'. Hendrick contends that, just as this ignores the chaos and myriad aspects of war, simply looking at numbers (data) in education is insufficient and misguided.

McNamara fallacy:

1. **Measure whatever can be easily measured.**
2. **Disregard that which cannot be measured easily.**
3. **Presume that which cannot be measured easily is not important.**
4. **Presume that which cannot be measured easily does not exist.**

In education, fallacy proceeds from conflating achievement and learning. (points 1 & 2 reflect EQAO entirely)

*interesting to note that after Vietnam War, it was revealed that many US army units overinflated body counts because of pressure to "be successful". Sound familiar?

Focusing on points 3 & 4 of the fallacy, Hendricks talks about how they relate to assessment of /attitudes toward teaching:

In my experience, the most important factors in great teaching are almost unmeasurable in numbers. The best teachers I know have a set of common characteristics:

1. They are not only very knowledgable about their subject but they are almost *unreasonably* passionate about it – something which is infectious for kids.
2. They create healthy relationships with those students in a million subtle ways, which are not only unmeasurable but often invisible to those involved.
3. They view teaching as an emancipatory enterprise which informs/guides everything they do. They see it as the most important job in the world and feel it's a privilege to stand in a room with kids talking about their passion.

Ashman: Ignore the Fads – Teachers should teach and Students should listen.

Defines explicit instruction, cites research backing it: see Rosenshine article, which outlines a structure of a direct instruction (DI) lesson entirely based on research.

Outlines language used to downplay DI, i.e. rote and drilling; contrasts to the more fashionable "inquiry learning" which he demonstrates, via research findings, to be less effective, and which he shows has never been successfully implemented in 50 yrs.

Offers evidence that inquiry learning & critical thinking both need a solid foundation of background knowledge, best attained from DI.

Critical of Dewey and Friere, who see DI as somehow undemocratic:

"Firstly, teachers really should know more than their students, so why pretend otherwise? Secondly, it fails to recognise the compassionate and empathetic ways in which contemporary teachers structure explicit instruction in the classroom, providing plenty of time for students to be heard."

Brooks-Kirkland: Myth of the Digital Native and Myths, Realities, Opportunities: What the research says about Digital Literacy.

Reviews research that students have some tech facilities (i.e. cyber safety, social media) but not others (i.e., using online technologies, information literacy)

"When asked to name their favourite websites, predominant themes are online videos, gaming and social networking, with the top three preferred sites being YouTube, Facebook and Google, in that order"

“economic inequality still plays a central role in the digital divide in terms of quality of access, but also in terms of digital literacy”

“While 75% of teachers surveyed agreed that the Internet and digital search tools have had a mostly positive effect on students‟ research habits, they commented on emerging concerns. These included students‟ overdependence on search engines, difficulty judging the quality of online information, ease of “borrowing” others‟ work, and low use of reliable sources like online databases, news organizations and print resources. Teachers in this survey also observed deficiencies in students online research habits, remarking that they often “equate research with Googling”,”

Please Refrain from Using Digital Native Ever Again.

Author offers overview of similar research as Brooks-Kirkland, but presents an interesting list of eight claims about digital natives for which researcher Erica Smith sees little proof:

1. Possessing new ways of knowing and being. A persisting claim within digital native discourse is that there is an urgent need for educational institutions (administrators, educators) and parents to recognize and adapt to digital native learners who possess new learning styles or different ways of knowing and being. This viewpoint sees current problems with education as a part of old ways of schooling (i.e., old ways of being and knowing), often associated with digital immigrants.
2. Driving a digital revolution transforming society. Another dominant claim is that there is a pressing need to acknowledge and accept a digital revolution transforming society. Many argue that this revolution is especially evident within and important for higher education.
3. Innately or inherently tech-savvy. Within digital native discourse, students are seen as innately or inherently tech-savvy, desiring and using digital technology in all arenas, as opposed to older educators who lack tech-savvy.
4. Multi-taskers, team-oriented, and collaborative. Net generation students are often said to be multi-taskers, team-oriented, and collaborative.
5. Native speakers of the language of technologies. Purported as native speakers of the language of technologies, digital natives are often seen as having unique viewpoints and abilities, especially regarding their unique aptitude for the language of technology.
6. Embracing gaming, interaction, and simulation. According to digital native claims, gaming, interaction, and simulation (i.e., multi-linear, visual, virtual environments) are both embraced by and well-suited to the Net generation.
7. Demanding immediate gratification. The Net generation is often portrayed as demanding immediate gratification, with short attention spans and no tolerance for delays. However, even some digital native proponents dispute this argument, such as Tapscott.

8. Reflecting and responding to the knowledge economy. Proponents of digital native notions often present a strong relationship between needs of the Net generation and the knowledge economy (i.e., students as consumers, demanding customer satisfaction), specifically within the context of the Information Age.

Hess: The New Stupid

Regarding obsession with data in education: "data-based decision making" and "research-based practice"

Defines New Stupid as: "reflexive and unsophisticated reliance on a few simple metrics—namely, graduation rates, expenditures, and the reading and math test scores", having three basic features:

1. Using Data in Half-Baked Ways: poor judgments in staffing, policies, knee-jerk reactions if you only look at data alone.
2. Simplistic interpretation of research: lots of consultants, superintendents and decision makers are in way over their heads when being asked to develop research-based practice. Often ignore nuances, or take research findings as definitive without any other opinion/research.
3. Giving short shrift to Management Data: focus on student achievement data is so intense, nobody considers hiring, spending, etc that ought to support educators. *a good question to counter with!

How to steer clear of the New Stupid?

1. First, educators should be wary of allowing data or research to substitute for good judgment. Ask questions.
2. Schools shouldn't just jump on any data; identify what data would be useful for you to have. Reject any that is not relevant or helpful.
3. Don't treat research as a panacea.

Zinshteyn: Does Student Motivation Even Matter?

Based on analysis of 15 years of global data (mainly PISA), cites **Loveless** study findings:

- academically high performing countries (Japan, Korea) had weak student engagement
- enjoyment of reading doesn't equate to higher literacy test scores (st survey vs score)
- math scores declined in many countries, as student enjoyment of math class rose
- other countries saw jumps in math scores, but students surveyed expressed less confidence

- developing countries' students had high motivation when surveyed, despite having among lowest math scores
- globally, girls outperform boys
- racial, socioeconomic gaps are always huge

So one conclusion is that "Lifting motivation actually may not be a worthwhile policy goal."

Hendrick: Teacher Knowledge – From Outside in to Inside out

A good read about the value of grass-roots change in education; rather than a top-down model for policy and practice, one that comes from teachers and students, neither strictly from theory or from practice but what is described as "critical reflection of the intersect of the two" (Fancy, but meh).

Better teacher satisfaction, better school climate

Watters: The Invented History of the Factory Model of Education

Author starts by giving long list of examples of critics disparaging education system as an outdated, Industrial Revolution type of "Factory Model" – how this term is meant to sum up all that is wrong with education today, how it hasn't changed in (as much as) 120 years (!!), how technology can fix it, how broken and outdated it is…

*interesting video in the article: Khan academy + Forbes Magazine talking abt History of Education. It's really inflammatory if you're a teacher. Buckets, age-based cohorts, ugggggh. Full transcript is here:

http://www.aud.life/2015/transcript-the-history-of-education

Author then goes on to prove how flawed that accusation is:

Factory Model – intended to make docile citizens and obedient factory workers? Prussia in late 18th century (origin of model applied in USA) wasn't industrialized so how was that an intent?

Demonstrates that there were, in the USA, many different parallel and competing educational models (parochial, monitorial, not to mention racial segregation) Monitorial system mimicked factories much more closely that the maligned "Prussian model".

The term Factory Model today is meant to be a political tool/statement – loaded and emotionally charged. Nicely concludes with:

we've invented a history of "the factory model of education" in order to justify an "upgrade" – to new software and hardware that will do much of the same thing schools have done for generations now, just (supposedly) more efficiently, with control moved out of the hands of labor (teachers) and into the hands of a new class of engineers, out of the realm of the government and into the realm of the market.

Alexander: A Pox on Growth Your Houses

Breaks down a study where 1594 hs students take a 45 minute online course: placebo course about what different parts of the brain do: course on growth mindset (GMS): course on Sense of Purpose (?!). Four groups studied, one for each and fourth group did both of the latter tests. The students' course final marks were analyzed at end of term. Neither the not at risk group nor the at risk of dropping out group showed any benefit; GMS didn't vary from zero, SP didn't either, the students who did both did worse in their courses than before, and most surprising so did the control/placebo group. So, authors declared GMS A SUCCESS because zero > negative numbers.

General conclusion: Manipulation of data happens, so don't take research at face value.

Hansen: Education Reformers are so Gullible

Challenges notion that education system is broken, and that most reforms rest on the premise that Teachers are the problem. Cites data that when asked to identify ineffective teachers, NY school districts only identified 1.5% for removal

Funding: (US Examples) ed funding has not risen as much as military or other; provides data to reinforce once again socioeconomic status as main determinant

Condemns online courses as a flawed money-saving strategy, foresees Corporate benefit from it:

"While there are certainly benefits to children learning from home for both the child and the teacher, the process relies on self-directed learning, which studies have shown leads to lower educational outcomes in college students. children who take these online classes preform worse on standardized tests than students who attend traditional schools. It's possible … that this sort of self-directed learning only works for a small portion of students who are already motivated to learn."

"Corporations are looking at ways to monetize America's children while simultaneously undercutting the power of their greatest potential adversaries."

Credits teachers' unions as the only counterbalance to this.

Bennett: Demolishing Education Myths – How Deep is Student Learning without Content Knowledge?

Review and Analysis of Daisy Christodoulo's book, Seven Myths About Education. Namely,

1. Facts prevent understanding
2. Teacher-led instruction is passive
3. The 21st century fundamentally changes everything
4. You can always just look it up
5. We should teach transferable skills
6. Projects and activities are the best way to learn
7. Teaching knowledge is indoctrination

NB: The book is a great resource (too much to summarize here) but each point is dissected, refuted with skill and evidence, in clear, jargon – free writing. Article below is by her:

Christodoulo: Minding the Knowledge Gap

Recounts beginnings of her teaching career: "knowledge" was used as a pejorative term, yet found students sorely lacking in useful, important knowledge that prevented the acquisition of skills.

Breaks down views of Rousseau, Dewey, Freire and even Dickens about students being empty vessels ready for us to pour facts into them; the myth that Facts prevent understanding

Why this is a myth:

- Facts are not the enemy of understanding
- Rousseau was writing in the 18th century; Dewey at the turn of the 20th; Freire in the 1970s. Research from the second half of the 20th century tells us that their analyses of factual learning are based on fundamentally faulty premises.
- Facts stored in long-term memory are vitally important for cognition: rules and process, facts, all kept in there become tools for our working memory and thinking.
- You get more done with a well-stocked tool box
- Bloom's taxonomy: knowledge is not a lower order thinking skill in the sense that it is less important, but because it is foundational

Ashman: You Say You Want a Revolution

Blows Freire to bits. Assesses it as "abstract and hard to apprehend".

Oppressors and Oppressed: Are teachers oppressors? As middle class, are we oppressed? No concrete examples.

Being oppressed prevents you from becoming fully human; ergo, you are dehumanized to your oppressors. They become dehumanized by oppressing you. Only ones who can fix this are the oppressed, through revolution. Need to get them to think critically about their situation in order to foment revolution.

Post-revolution need an educational system for and by the people. Need to listen to the people and then reflect back what you have gotten from them. This second stage will be education for all, in a 'continual state of self-liberation'.

He cites Mao's Cultural Revolution as an example of the ideal. Let that sink in a bit.

Freire decries Banking Model of Education (teachers have the commodity – knowledge – which we deposit into our pupils) in favour of a poorly fleshed out Questioning Model of Education. Freire's goal is primarily to lead to social change in Latin America of the late 1960's so:

"Freire talks of showing peasants photographs and asking them what they think about them. He goes to great lengths to try to explain how themes and topics should be chosen; never by the

teacher but in dialogue with the students and always relevant to the direct experience of the students. However, there's some hand-wringing here because Freire has clear objectives as to where he wants all of this to go. There is also an element of farce about these middle class teachers – 'teacher-students' in Freire speak – going into villages of apathetic peasants and launching investigations 'with' them. It's not paternalistic at all. No, not at all. Honest. Really."

Features of the Banking Model according to Freire, with many problems:

(a) the teacher teaches and the students are taught;

(b) the teacher knows everything and the students know nothing; (that's harsh!)

(c) the teacher thinks and the students are thought about; (why can't they both think?)

(d) the teacher talks and the students listen—meekly; (don't we expect dialogue?)

(e) the teacher disciplines and the students are disciplined; (teachers answer to no one?)

(f) the teacher chooses and enforces his choice, and the students comply; (no student choice ever? Is student choice always appropriate – they don't know the subject matter? How much choice does teacher really have? Shouldn't we trust teacher to make right choices?)

(g) the teacher acts and the students have the illusion of acting through the action of the teacher; (do we not want them to have real knowledge and experiences? Participation?)

(h) the teacher chooses the program content, and the students (who were not consulted) adapt to it; (teacher may not have full control of this – curricula, etc – but shouldn't the teacher, as a content expert, be that guide?

(i) the teacher confuses the authority of knowledge with his or her own professional authority, which she and he sets in opposition to the freedom of the students; (harsh!)

(j) the teacher is the Subject of the learning process, while the pupils are mere objects. (seems grossly misguided)

Ashman's response to this, what he calls, caricature of education:

"In my view, a teacher needs to both have and exercise authority, at an intellectual and a disciplinary level. Freire mainly talks about adult education and so maybe the latter is not as pertinent to him. However, a lack of teacher authority poses two main problems. Firstly, misconceptions will develop; concepts that have been demonstrated to be false but which are traps that people fall into e.g. that the Sun orbits the Earth. These have to be corrected from an authority and cannot be co-constructed out of students' experiences. Secondly, the absence of teacher authority does not lead to egalitarianism. If you have ever experienced a difficult inner-

city classroom you will know that whatever authority a teacher relinquishes will be taken by another; perhaps a classroom bully. This does not lead to a safe environment in which to learn."

(personal note: why is this 1968 book so influential in 2015?! Pretentious bastards, I'm guessing, like to say they've read it. It is clearly meant in an actual revolutionary context, with actual socio-political change as end goal; the Banking Model seems radically outdated, at best, misconstrued or misrepresented version of Spanish colonial schools at best. WHY DO WE GIVE THIS GUY ANY CREDENCE?! WHYYYYY?!)

(ps Fullan got his PhD in 1968, too. It's a fave year for Ontario Education, apparently)

Discovery Learning is Not Effective

*worth checking the link for other resources

using minimally guided approaches does not lead to effective or efficient learning. Moreover, it does not lead to better problem solving or learning to solve problems.
Ignores limitations of human working memory

For novice learners, discovery learning should never be the primary instructional method employed

discovery or problem-solving can be used and that is when the learner has gained a good deal of experience in a topic area. However, most learners are novices and they just flounder with discovery methods.

The evidence shows that learning and instructional professionals should NOT use discovery-based learning methods as a way to design learning experiences, except perhaps in the rare instances where the learners are highly experienced with the targeted topic. Minimal instructional guidance leads to minimal learning

*heavily relies on and cites this article. Can be downloaded as PDF at link below citation. Excellent read.

Kirschner, Paul A., John Sweller, and Richard E. Clark. "Why Minimal Guidance During Instruction Does Not Work: An Analysis of the Failure of Constructivist, Discovery, Problem-Based, Experiential, and Inquiry-Based Teaching." *Educational Psychologist* 41.2 (2006): 75-86. Print
http://projects.ict.usc.edu/itw/vtt/Constructivism_Kirschner_Sweller_Clark_EP_06.pdf

Slavin: It's proven. It's perfect. I'll Change it.

Just because something works in one place (jurisdiction/district/country) doesn't mean it will work where you are.
Worse than blindly adopting without considering your circumstances and needs? Adopting, then trying to alter it. Best to implement as is.

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