

Educational Technology Points of Inflection

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Fads and Prejudices Hide Potential Points of Inflection

Introduction

The tendency to follow fads is one of many strategies our minds use to reduce the cognitive load with which we must deal. After all, since “Everyone is doing it!”, then it must be okay, right? That conclusion saves a person from actually having to think very much about a particular decision. So from pet rocks to hula hoops to Rubik’s Cubes, throughout history people everywhere have jumped on bandwagons. In the world of the Internet, the phenomenon is akin to a YouTube video going viral. In marketing and media its result is known as buzz, but what is the effect of this tendency in the world of education and educational technology?

In their scholarly treatment of the phenomenon, Bikhchandani, Hirshleifer, and Welch (1992) describe fads and other similar concepts as “informational cascades.” They state that these occur “when it is optimal for an individual, having described the actions of those ahead of him, to follow the behavior of the preceding individual without regard to his own information” (1992, p. 992).

We can see this tendency play out in popular culture, as cited above, or even in challenging job searches: Someone is fired for specious reasons in one setting then has serious trouble getting hired by someone else, once the new potential employer learns of the previous firing.



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Fads in Education?

Despite the human propensity to rely on the ideas of others, one would think that the enlightenment that professional educators have received through years of preparation and experience would make them less subject to fads and prejudices than the general public, right? Well, one would be wrong. In fact, the opening sentence of one article from the educational technology literature states: “As we are all painfully aware, education in general, and information technology in education in particular, are highly prone to fads” (Maddux, 2003a, p. 121).

The author also refers to “repetitive cycles” of this penchant for fads (p. 122), and elsewhere writes of “a destructive pendulum cycle of unrealistic expectations followed by disappointment and abandonment” (Maddux, 2003b, p. 42).

Speaking to the cyclical nature of instructional methods in my field of foreign language teaching, one colleague illustrated the point with humor, yet he was rather convincing about the problem:

The 30 year cycle has a witty side to it. If someone accuses you of being 20 years behind in your methods, just answer: “That’s wonderful. It means I’m 10 years ahead of you.” (Decoo, 2001)

Thus, it seems that not only does our good judgment too often fall victim to fads, but also we return to old ideas, thinking in error that they are new and somehow better.

We find a rather poignant example of fads in education in Noam Chomsky’s critique (1959) of Skinner’s *Verbal Behavior*. He wrote this piece only four years after completion of his PhD studies, but it is widely seen as a key turning point in the cognitive revolution that soundly rejected behaviorism. Indeed, his impact on psychology has been remarkable, especially considering that his field is linguistics, not psychology.

As an illustration of his impact, a list of citations compiled from the *Arts and Humanities Citation Index* for the period 1980 to 1992 identified Chomsky as the most cited living person (“Chomsky is citation champ,” 1992). He trailed only Marx, Lenin, Shakespeare, Aristotle, the Bible, Plato, and Freud. That same article from an MIT publication also indicated that he had been quoted 7,449 times in the *Social Science Citation Index*, likely making him the most quoted living person during that time period as well.

Chomsky’s impact has been broad and deep in many fields related to learning, including the field of language acquisition and teaching in which I work. As one simple example, the term “drill and practice” became connected to behaviorism and morphed into “drill and kill.” Despite the dramatic depiction of that statement, we now know that repetitive encounters with language structures formulated in various ways and occurring in various contexts are the essence from which learners construct meaning in their minds. This realization has led to an important, evidence-based shift away from Chomsky’s view that humans are endowed with an innate language faculty towards one that suggests that language is a general cognitive skill that emerges upon exposure to language over time. While few would question that a shift away from behaviorism was

warranted, some would argue that the baby was thrown out with the bath water (Bush, Melby, & Lewis, in press).

The cognitive revolution that was greatly assisted by Chomsky also provides at least one more dramatic example from the wider field of education. The use of concept maps (also known as semantic maps) has become a mainstay of many modern classrooms, yet one line of research is challenging the presumed superiority of the technique.

The conclusion is akin to saying that reading the chapter and answering the questions at the end of the chapter is a better learning technique than the supposedly more sophisticated techniques offered up by widely accepted theories of how we learn.

Not only does retrieval produce learning, but a retrieval event may actually represent a more powerful learning activity than an encoding event. This research suggests a conceptualization of mind and learning that is different from one in which encoding places knowledge in memory, and retrieval simply accesses that stored knowledge (Karpicke & Blunt, 2011).

Another term *du jour* is the notion of “community of practice” that encapsulates the social nature of human enterprise, “groups of people informally bound together by shared expertise and passion for a joint enterprise” (Wenger & Snyder, 2000). The concept is being widely explored in contexts that apply to teachers and students alike.

Whether we address working, learning, or playing, it would be foolish to deny that humans are social beings that do things together. It would also be foolish to deny that individuals can think, learn, and produce...alone.

Prejudices: Fads in One’s Own Mind

At this point I would like to expand the discussion a bit to include the notion of prejudices, which I submit are related to fads. Just as fads draw strength from the ease of making a decision based on what we see others doing, prejudices facilitate the working of our minds in a related but different way. Instead of relying on the opinions of others, we draw conclusions based on the way we ourselves have thought in the past.

By reducing the need to think much about a decision in a familiar area today, our recollections of the past help us avoid unnecessary cognitive effort in the present.

President Ronald Reagan used this insight into human behavior rather humorously when he said, “The trouble with our Liberal friends is not that they’re ignorant; it’s just that they know so much that isn’t so.” Of course, liberals can turn this around and say, “The trouble with our Conservative friends is not that they’re ignorant; it’s just that...” The point once again is that as human beings, we are subject to prejudices similarly as we are to the fads we might encounter in life.

The downside of the impact of this predisposition to succumb to prejudice became evident to me in an interaction I had with a highly regarded colleague.

Some of my work with media for language learners involves supervising the transcription of video to provide learners with access to subtitles as they view video in the language they are learning. I became aware that a colleague, one who teaches one of the languages with which we have worked, would probably not use these transcriptions, due to the notion that the use of text with video is counterproductive for the language learning process. In a conversation by the snack table after a session of a conference we were both attending, I teased my colleague a bit with the comment that a lot of good research has shown that learners who have subtitles available as they view video will benefit from their use. Not only will their comprehension of the video improve during viewing, but their ability to speak the language in the future will also be enhanced. My colleague’s response was basically, “I don’t care; I don’t want my students to see the text.”

Another manifestation of prejudice has to do with whether or not we should provide dictionary definitions to learners as they view a video with subtitles. Using software we have developed, learners are able to click on words and automatically receive definitions or translations from the dictionary Web service we have created. The reaction of some colleagues is to say, “I don’t want my students looking up every word. That is nothing more than decoding; it’s a crutch, which is not helpful.”

As it turns out, not only does research show that having these resources is beneficial, but also the data we are collecting on the experiences of system users demonstrates that learners don’t look up every word. In fact, indications are that their primary goal during the activity is to understand what they are seeing and hearing, so they only look up enough to achieve that goal.

Research: The Solution

Given that the Internet puts us awash in a sea of information, it should be easier than ever to arrive at answers to the important questions we encounter. We should be able to see and learn for ourselves and not rely so much on what we see others doing. Yet, the easy availability of information is a double-edged sword.

We risk not only thinking that a particular area of research and development is warranted primarily due to its existing popularity, but we also discover that it is very easy to find people who agree with us, perhaps confirming our prejudices.

This downside points out the crucial need for good research, and I was impressed by a recent article by Reeves and Reeves (2015) that suggests that our research agendas might not be what they should be. These, they say, “are focused on things (e.g., tablet computers) rather than problems (e.g., the lack of readiness for higher education endemic among high school graduates)” (p. 29).

I found that the list of “things” from Reeves and Reeves (2015) was somewhat similar to a list of various topics that I have been exploring as candidates for educational technologies and fads, adding in various other topics for comparison. To facilitate an exploration of recommended research topics and fads, I added their items to my list to see how the various ideas compare. I then expanded the ERIC searches I have been carrying out to searches on Google Scholar and have included the results in **Table 1**.

Table 1. Results of various ERIC searches in nine educational research journals¹ and Google Scholar.²

ERIC	Topics of Interest	Google Scholar
0	"virtual assistants"*	1,220
0	"wearable technology"*	2,110
2	(flipping OR flipped) AND classroom	3,370
0	"smart boards" OR smartboards*	6,480
0	"3D printing"*	8,370
2	"immersive learning"*	4,480
3	"learning analytics"*	6,000
2	clickers*	9,810
4	"testing effect" OR "retrieval practice"	6,120
5	"video production" OR "film production" OR "media production"	16,700
7	"mobile learning"*	45,900
10	"community of practice"	85,900
40	"concept map" OR "concept mapping"	17,000
16	"web 2.0"	96,300
1	"machine learning"*	202,000
27	"online learning"*	195,000
41	"class size"	182,000
219	"cooperative learning"	200,000
482	"self-concept" OR "self-esteem"	17,600
499	"instructional design"	193,000
38	tracking	2,210,000
244	"serious games" OR games** OR gamification OR simulations**	1,910,000
174	diversity	2,750,000
367	sociocultural OR "social media" OR "social cognition" OR "cooperative learning"	2,390,000
1476	social	3,370,000
1821	computer OR technology	4,110,000
3,828	Web	4,470,000

¹The list of research journals included the following, formatted for the ERIC search with the Boolean expression OR as shown: "American Educational Research Journal" OR "Educational Technology Research and Development" OR "Educational Researcher" OR "Journal of the Learning Sciences" OR "Learning and Instruction" OR "Review of Educational Research" OR "Journal of Educational Psychology" OR "Educational Psychologist" OR "Journal of Media Psychology."

²The search on Google Scholar was facilitated by adding the Boolean expression, "AND (education OR classroom)" to the listed topics in **Table 1**. The order of appearance was determined by a numeric combination of the results of the two searches.

*These items were included from the list of "things" from Reeves and Reeves (2015).

**These items appeared on both lists.

I agree with the primary point made in the Reeves and Reeves article that good research is needed, research that is “vital, uplifting, conscientious, and authentic” (p. 30). I would argue, however, that a worthwhile research agenda could very well involve topics such as “learning analytics” and “online learning,” to name just a couple of areas from their list of “things” (p. 27). We can easily refer to these as technologies, explorations of which I suggest could easily make up valuable research agendas.

Rather than exploring the technologies themselves, we can study their features and the impact these can have on the significant problems detailed on the list provided by Reeves and Reeves.

To be very specific, research into such areas as “ineffective teaching” and “failure to engage” would enable us to explore how the features of various technologies can help address problems associated with learning itself and the systems in, and with which, learning takes place.

In reference to a point made by Reeves and Reeves, this type of research unquestionably involves doing much more than putting a technology into the hands of the learners and then asking them what they think about it, which is what the authors suggest happens all too often. What I am proposing is that we investigate what can be done with the technology to support learners and learning rather than the technology itself.

Let’s consider “learning analytics” for example, one of the items from their list and some would say a current fad, as is another: “flipping the classroom.” I suggest that a good research question would not involve asking whether flipping the classroom is a good thing, which would be tantamount to researching the “thing,” as decried by Reeves and Reeves (2015).

My rationale is that I fear that we neither know the best ways for students to benefit from their experience on the technology, nor do we know the best sort of information on that experience that will improve the teacher’s ability to work with the learner.

Rather, we could pursue an investigation of both of these concepts in a single study, with three specific questions, which would yield a great deal of important information regarding learning settings where flipping the classroom is to take place.

First, we need to determine how the teacher’s time in a flipped classroom setting can be best used, given that students are doing certain types of work outside the classroom.

Second, considering the types of work students will be doing in that setting, we could explore the types of work most likely to help maximize the benefit students spend with the teacher.

Finally, we could uncover the types of data that should be collected on the students’ out-of-class learning activities and in what form this data would be best presented to the teacher to increase learner accountability.

Conclusion

It should be clear that following such a scenario that involves online learning and learning analytics will not simply involve an increase in the use of technology in the learning process. A key outcome would be the opening up

of interesting opportunities for more teacher attention to the individual needs of students, which would allow more systemic involvement in addressing some of the problems raised by Reeves and Reeves (2015).

Effective analysis of the data would provide the opportunity to learn about learning and the exploration of problem areas such as learner engagement and motivation, among others. No doubt nested within all of that is a key point of inflection on the development curve of educational technology, which good research will help us uncover. □

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