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The Rigor Gap: Teachers’ Beliefs about Critical Thinking
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On the educational scene, no problem has proven as vexatious as the achievement gap between the haves and have-nots of our society. Causes of the achievement gap are many, but typically heading the list is the practice of providing a less rigorous curriculum for low-advantage learners. The rigor gap, as I call it, also has unknown causes. I’d like to consider one possible factor today: teacher’s beliefs about what it is they do for a living. In particular, I’d like to focus on teacher’s beliefs about critical thinking, since critical thinking would appear to be a key element in rigorous instruction.

Do teachers believe it is appropriate to ‘dumb it down,’ that is, reduce the critical thinking content in lessons for less-advantaged learners? Do they believe in steering high critical-thinking activities, such as debate, more to high-advantage learners, and low critical thinking activities, such as note-copying, more to low-advantaged learners? There is some preliminary evidence that this pattern of differentiation takes place in schools, and if so, that’s a source of inequity, especially considering that tests tap critical thinking skills a little bit better than they used to. And there might also be a self-fulfilling prophecy at issue here, wherein low-advantaged learners get the ‘lean’ curriculum, which further exacerbates their disadvantages, while their high-advantage peers benefit from a challenging curriculum that only leads to more challenges down the line.

In order to get at this, I have done a series of five research projects. I’ll give you brief summaries of these today. I also brought along a handout with the citations and the abstracts and my email address, so if you’re interested in more information, I’ll be happy to help.

To do this work, I developed a survey instrument called the Critical Thinking Belief Appraisal. The CTBA provides vignettes of classroom activities of two kinds (high-CT and low-CT) and it asks respondents to rate their efficacy for two populations of learners (high-advantage and low-advantage). So its classic two-by-two design: high-high, high-low, low-high, low-low. Such a design allows me to assess respondents’ pedagogical preferences – the blend of high and low critical thinking activities that a teacher judges to be best for a particular learner population. Looking at the direction of the two pedagogical preference effects, and also the effect sizes, we can determine the extent to which teachers believe in this differentiation. A series of five studies supported the utility of the instrument.

So on we went, administering the instrument to 145 in-service teachers, and it turned out that this group of teachers valued high-CT over low-CT, for all populations. However, they did not do so equally. Here are the eta values (effect sizes), which indicate that the high-advantage pedagogical-preference effect was almost three times larger than the low-advantage one. Teachers did not prefer low-CT activities over high-CT ones for low-
advantage learners, as had previously been suggested. However, the effect sizes do suggest that teachers favored high-CT activities more with high-advantage learners and the low-CT activities more with low-advantage learners. And so, the CT differentiation does emerge. It’s been a very stable pattern, having been replicated three times since.

But being stable does not mean that it is problematic. After all, maybe the low-advantage learners ought to receive some remedial regimen of drill and practice.

In order to get at that question, I administered the instrument to about a hundred supervisor-nominated expert teachers and about 100 randomly selected in-service ones, and here are the comparisons. On the left side of the graph, there was no difference between the groups in the rating of high-CT, high advantage. However, our expert teachers were much more supportive of the use of high-CT instruction for low advantage learners, with an effect size of .48. On the right side of the graph, with the bars facing down to show direction change, we see how the in-service teachers valued low-CT instruction for both learner populations, more so than did the experts.

Look how big the pedagogical differences are. These are some of the biggest effect sizes I’ve ever seen. The giant bars sticking out in green here are the work of our expert teachers, who apparently loathed the low-CT activities and loved the high-CT ones, no matter to whom it was being taught. Our in-service teachers, on the other hand, produced a very small pedagogical-preference effect for high-advantage learners and none at all for low-advantage learners. So, our experts were more favorable to high-CT activities, less favorable to low-CT ones, and see less likely to show the pattern of CT differentiation. In other words, experts produced results less likely to contribute to the rigor gap.

But where do these beliefs come from? Are they the result of self-selection of a teaching career? Do they emerge in pre-service education? Is this the effect of working in the trenches for years? The next study proceeded by administering the instrument to undergraduates who had no interest in teaching, prospective teachers at the beginning of a teacher-ed program, pre-service teachers at the end of one, and in-service teachers who had been in the field for at least five years. This design allows us to examine self-selection effects, pre-service education effects, and also the combined effects of teaching experience and in-service education.

Let’s start by looking at self-selection effects. How do people who chose to be teachers differ from those who chose not to? For low-critical thinking activities, there’s no difference at all. However, ratings for high-critical thinking activities were higher for both populations among the self-selected teachers. In some ways, they’re like naïve constructivists. A very interesting pattern in pedagogical preferences emerges. On the left, our controls produced no pedagogical-preference effect for high-advantage learners, but our perspective teachers produced an effect size of .30 favoring high-CT. On the left, however, we find out who really does want to dumb it down: the controls. They liked the low-CT activity more than the high-CT one, with an effect size of .36 when teaching low-advantage learners. Perspective teachers, in contrast, produced no effect there.
So, self-selection ends up being a very powerful influence on teacher’s beliefs on how much critical thinking should be used in the classroom. But the differences are obtained for high-CT activities, not low-CT ones. They come into the business already supporting high-CT instruction, and show a lower level of CT-differentiation.

But on we go, comparing prospective and pre-service teachers. Now we’re looking at the effect of pre-service education, if any. Here are the univariate comparisons. Starting on the left, all the ratings that changed fell, so the perspective teachers were higher than the pre-service ones. So it’s as if development proceeded by attrition. Anyway, the high-CT, high-advantage fell by a .05 effect size in pre-service ed, and there was no change at all for the high-CT, low advantage. So that news isn’t so good, but it gets better when you look on the right, because apparently the kids got religion when it comes to the efficacy of low-CT activities, which fell for both populations of learners. So, we have lots of losses here, but mostly on the low-CT side. Not much changed in pedagogical preferences as a result for the high-advantage learners, on your left. But on the right you see the emergence of the PP effect that you saw on the in-service teachers a minute ago. While our teachers just starting out favored the 50-50 blend for the low-advantage population, our pre-service teachers had gained a pedagogical preference effect, if a diminutive one, at .07. So preservice education is a vital time, it’s when the clay is still soft and you can still do something with it, resulting in a moderate decrease in CT-differentiation, apparently linked to reduction of support for low-CT activities.

How about once they get out into the trenches and they get teaching experience and in-service education? What difference does that make? Answer: not a whole lot. Three of the four variables showed no change whatsoever, and the one variable that did change, high-CT for low-advantage, actually went down. Now, that would be sorry news if the effect size was meaningful, but it wasn’t. At .02, it doesn’t say a whole lot. So, teaching experience and in-service ed, as important as they are, don’t appear to have much influence on teachers’ beliefs about critical thinking. And there was little change in their CT-differentiation as a result. So, the pattern we saw among in-service teachers emerges during pre-service ed., and its not some fact of life in the classroom.

But why? What are the issues teachers take into account when deciding that it’s appropriate to ‘dumb it down’ for low-advantage students?

In order to get at that question, I began by interviewing 20 teachers. I showed them the prompts in the CTBA, and I asked them, ‘when would you be likely to use this activity or that one?’ This produced a list of 11 candidate issues, which I then loaded into a survey instrument and gave to a larger population of randomly selected teachers. Two issues ended up having no association with pedagogical preferences, surprisingly. The issues classroom management and ease of assessment had no effect, although I would have thought both of them would have to do with ‘dumbing down.’ The issues that prompted high-CT instruction included high stakes tests. Apparently, teachers are beginning to realize that today’s tests are not your father’s Oldsmobile. Other factors promoting high-CT activities were influence of administrators, and the nature of the subject (which in this case was social studies, and would likely differ in other subjects).
But here is the slide at which we should be looking, because here are the predicates of the pedagogical-preference effect favoring low-CT activities, the ‘dumb down’ factors. Heading the list: learners' prior knowledge. When students are thought not to have a lot of prior knowledge, there’s no point in making them think, according to these teachers. So much for discovery learning, eh? Time constraints, the influence of parents and colleagues, and learner’s levels of motivation and ability are also statistically significant predictors of a teacher opting to ‘dumb it down.’ These are the things about which teacher education might well be centered, if what we would like to see is equitable use of critical thinking in schools.

Do something about the differences in academic rigor between high-advantage and low-advantage schools, and you’ll probably have started to do something about the achievement gap that goes with it.