

Effect Size Cheat Sheet

Effect Size Defined:

Statistically speaking, the strength of the relationship between two variables. John Hattie, Professor of Education and Director of the Melbourne Education Research Institute at the University of Melbourne, Australia, says 'effect sizes' are the best way of answering the question 'what has the greatest influence on student learning?'

Effect Size Applied:

Reverse effects are self-explanatory, and below 0.0

Developmental effects are 0.0 to 0.15, and the improvement a child may be expected to show in a year simply through growing up, without any schooling. (These levels are determined with reference to countries with little or no schooling.)

Teacher effects "Teachers typically can attain $d=0.20$ to $d=0.40$ growth per year—and this can be considered average"...but subject to a lot of variation.

Desired effects are those above $d=0.30$ (Wiliam, Lee, Harrison, and Black 2004) and $d=0.40$ (Hattie, 1999) which are attributable to the specific interventions or methods being researched-- changes beyond natural maturation or chance.

Blatantly obvious effects: An effect-size of $d=1.0$ indicates an increase of one standard deviation... A one standard deviation increase is typically associated with advancing children's achievement by two to three years*, improving the rate of learning by 50%, or a correlation between some variable (*e.g.*, amount of homework) and achievement of approximately $r=0.50$. When implementing a new program, **an effect-size of 1.0 would mean that, on average, students receiving that treatment would exceed 84% of students not receiving that treatment.** Cohen (1988) argued that an effect size of $d=1.0$ should be regarded as a large, blatantly obvious, and grossly perceptible difference [such as] the difference between a person at 5'3" (160 cm) and 6'0" (183 cm)—which would be a difference visible to the naked eye.

Effect Size CAUTION:

Reduce temptation to oversimplify. This is one more resource in our efforts to problem-solve on behalf of our students. We need to be careful about drawing too definite a conclusion from an effect size without examining the study. For example, homework is shown to have an overall effect size of 0.29, which is low and well below the average of 0.40. But when you look more closely, you find that primary students gain least from homework ($d = 0.15$) while secondary students have greater gains ($d = 0.64$).