

Hattie Effect Size 2016 Update

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You have probably heard about John Hattie. Specifically, you may have heard about his research on the factors that affect student achievement. Hattie uses **effect sizes** to show the relative impact of each factor. An effect size of 0.4 is regarded as *average* or *typical*. His work is ongoing. To my knowledge, his results were 1st published in 1999. They became well-known after he published a book in 2008 called *Visible Learning*. His results were last updated in late 2016. This Hattie effect size 2016 update summarizes these new findings in the context of what went before.

Hattie Effect Size 1999 Results

I first heard about John Hattie and his work on effect sizes in 1999 when he published his article [Influences On Student Learning](#).

At the time, Hattie was at pains to point out that nearly everything we do in the classroom helps students to learn. Put another way, every teaching strategy worked, at least to some degree. Therefore, research needed to focus on *what works best* rather than *what works*.

- Some of the factors that had a high impact included students *cognitive ability (IQ)*, *Direct Instruction* and *feedback*.
- Some of the factors that had a lower than average impact included *repeating students*, *parental involvement* and *ability grouping*.

Hattie Effect Size 2008 Results

In 2008, after growing this database grew to include over 800 meta-analyses, he published the book Visible Learning. Soon afterwards, the phrase *Hattie effect size* became an incredibly popular search term.

- New factors that had a high impact included *teacher clarity*, *formative evaluation* and *acceleration*.
- New factors that had a lower than average impact included *inductive teaching*, *inquiry learning* and *teaching test taking*.

Hattie Effect Size 2016 Results

Since then, he has continued to add to his database to include over 1200 meta-analyses. The latest effect sizes were published in 2016.

- New factors that had a higher than average impact included *collective teacher efficacy*, *conceptual change programs*, *teacher credibility*, *response to intervention*, *cognitive task analysis* and particular types of *classroom discussion*.
- New factors that had a negative or lower than average impact included *depression*, *corporal punishment in the home*, *web-based learning*, and *juvenile delinquent programs*

Of interest, a new item *service learning* had a moderate effect.

Here are the updated Hattie effect sizes for 2016. Just hover over each bar to see its effect size.

I will help you unpack what some of these factors mean in practical terms in future articles throughout the year.

The 6 Super Factors

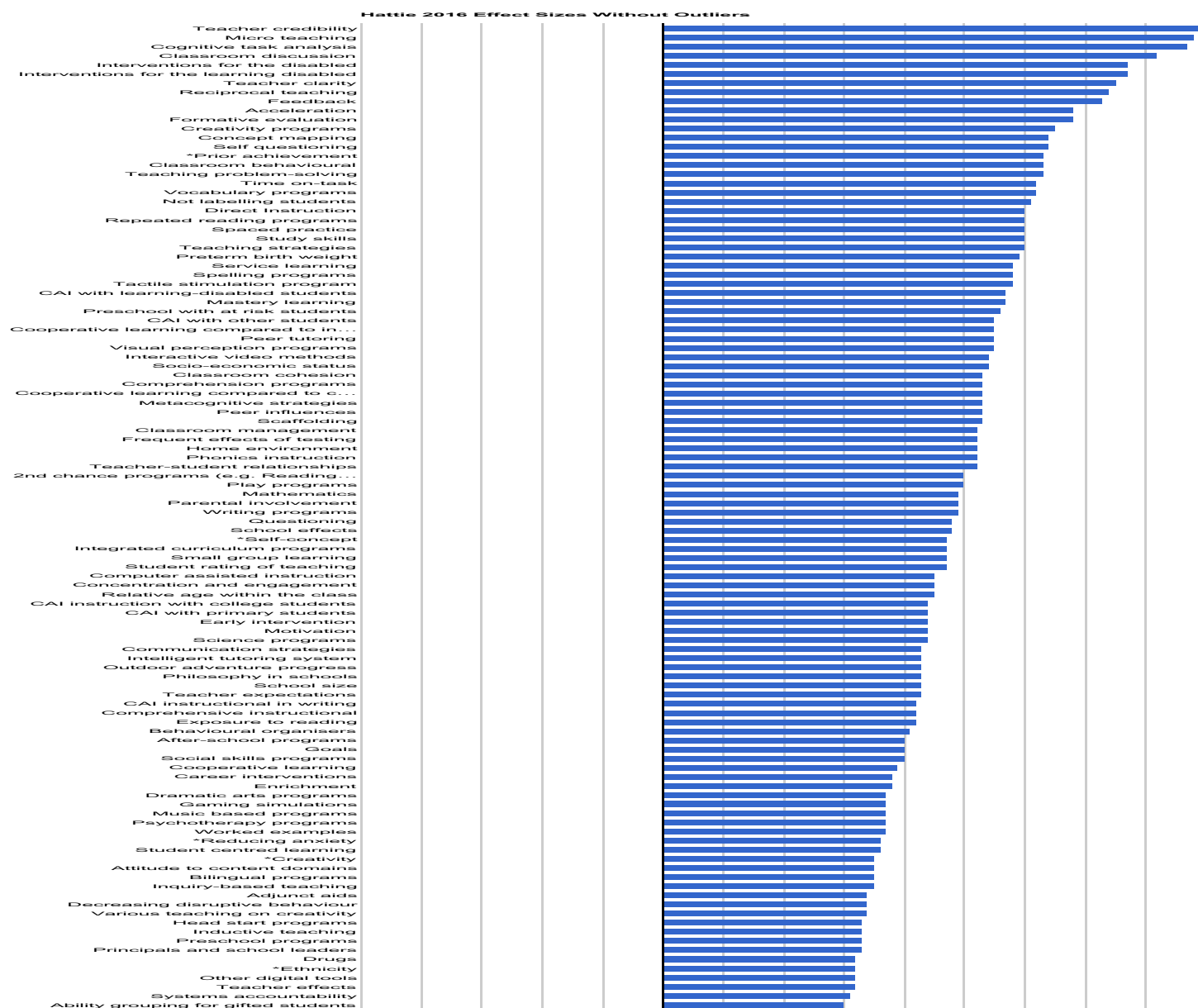
There were some new and some old favourites at the top of the list. Six of these had such a strong effect that they would distort *any* attempt to graph them. I call these super factors. Including them in the graph would distort the important differences between the other 188 factors. So I have listed them here.

The 6 super factors were:

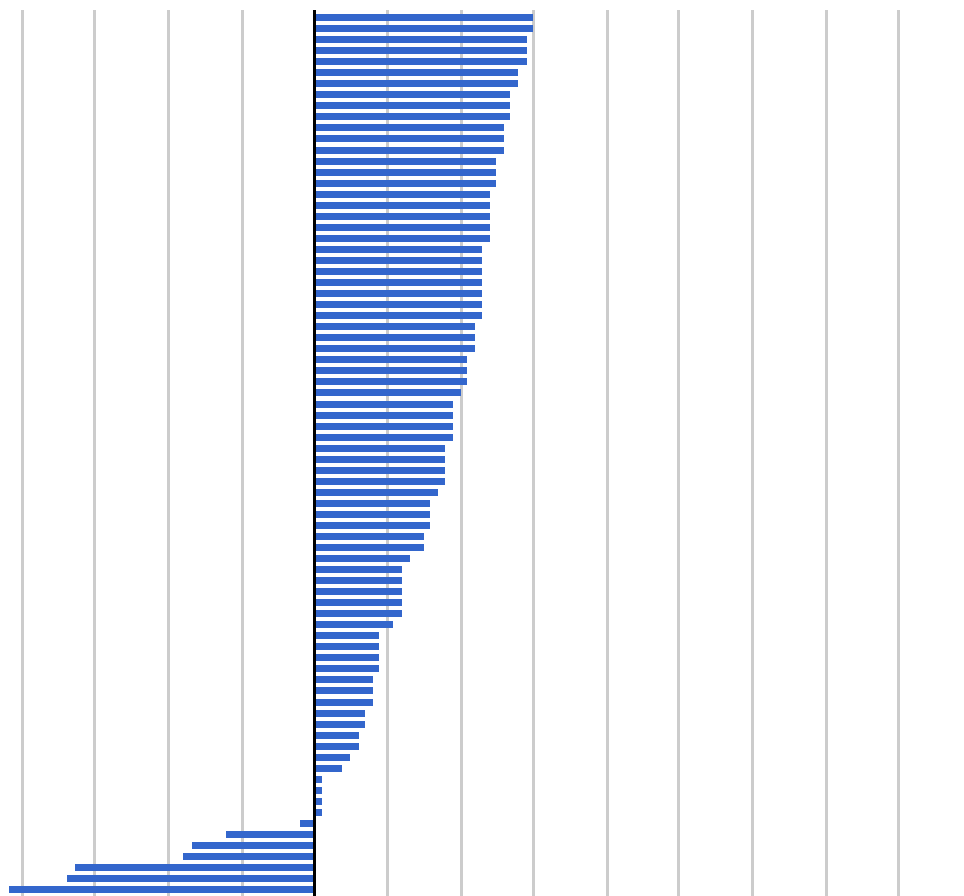
1. **Teacher estimates of achievement** ($d = 1.62$). Sadly, this reflects the accuracy of teachers' knowledge of students in their classes, not "teacher expectations", so this is not a factor teachers can use to boost student achievement.
2. **Collective teacher efficacy** ($d = 1.57$). This is a factor that can be manipulated at a whole school level. It involves helping all teachers on the staff to understand that the way they go about their work has a significant impact on student results – for better or worse. Simultaneously, it involves stopping them from using other factors (e.g. home life, socio-economic status, motivation) as an excuse for poor progress. Yes, these factors hinder learning, but a great teacher will always *try* to make a difference despite this, and they often succeed.
3. **Self-reported grades** ($d = 1.33$). Again, this is a factor that teachers can't use to boost student achievement. It simply reflects the fact that students are pretty good at knowing what grade they will get on their report card before they read it.
4. **Piagetian levels** ($d = 1.28$). This is the third super factor that teachers can do nothing about. It simply means that students who were assessed as being at a higher Piagetian level than other students do better at school. The research does not suggest that trying to boost students' Piagetian levels has any effect.

5. **Conceptual change programs** ($d = 1.16$). This is a promising one. The research refers to the type of textbook used by secondary science students. Some textbooks simply introduce new concepts. Yet, students have already formed their own understanding of the world around them, often including many misconceptions. These misconceptions can hinder deeper levels of learning. Conceptual change textbooks introduce concepts and at the same time discuss relevant and common misconceptions. While the current research is limited to science textbooks in secondary school, it is reasonable to predict that when teachers apply this same idea to introduce any new concept in their classroom, it could have a similar impact.
6. **Response to Intervention** ($d = 1.07$). This is a structured program designed to help at-risk students make enough progress and ideally achieve comparable results to their peers. There is plenty of commercial literature and material to help schools use RTI, but basically, it involves screening students to see who is at risk, deciding whether supporting intervention will be given in class or out of class, using research-based teaching strategies within the chosen intervention setting, closely monitoring the progress, and adjusting the strategies being used when enough progress is not being made. While the program is designed for at-risk students, the principles behind it are the same advocated by John Hattie as being applicable for all students. Note – Response to Intervention (RTI) is increasingly being referred to as Multi-Tier System of Supports (MTSS). The two terms mean the same thing.

Here are the other 188 factors. Simply hold over each bar to view the effect size.



CAI in mathematics
 CAI with high school students
 Collaborative learning
 Homework
 Mobile phones
 Desegregation
 Home visiting
 Early intervention in the home
 Teaching test taking
 Use of calculators
 CAI in reading
 Use of PowerPoint
 Volunteer tutors
 Early interventions
 Married parents vs. divorced parents
 Teaching reforms
 Bullying
 Illness
 Mainstreaming
 Religious schools
 Values education
 CAI in science
 Competitive vs. individual instruction
 Finances
 Individualised instruction
 Matching style of learning
 Programmed instruction
 Summer school
 Exercise and relaxation activities
 Teacher verbal ability
 Visual audio/visual methods
 CAI in small groups
 Class size
 Extracurricular programs
 School cultural effects
 Aptitude/treatment interactions
 Learning hierarchies
 School counselling effects
 Team teaching
 Family structure
 Special college programs
 Web-based learning
 Within class grouping
 "Personality"
 Adopted children
 Home school programs
 Teacher immediacy
 Out of school curricula
 Sentence combining programs
 Distance education
 Ability grouping
 Diet
 Juvenile delinquent programs
 Problem-based learning
 Teacher education
 Diversity of students
 Detracting
 Mentoring
 School calendars and timetables
 Subject matter knowledge
 Gender
 Perceptual-motor programs
 Single sex schools
 Charter schools
 Sleep
 Types of testing
 Whole language
 College halls of residence
 Multiage classes
 CAI in distance education
 Open vs. traditional classrooms
 Parental employment
 Student control over learning
 Summer vacation
 Welfare policies
 Retention
 Television
 Home corporal punishment
 Mobility
 Depression



Factor	Effect Size
Teacher credibility	0.9
Micro teaching	0.88
Cognitive task analysis	0.87
Classroom discussion	0.82
Interventions for the disabled	0.77
Interventions for the learning disabled	0.77
Teacher clarity	0.75
Reciprocal teaching	0.74
Feedback	0.73
Acceleration	0.68
Formative evaluation	0.68
Creativity programs	0.65

Factor	Effect Size
Concept mapping	0.64
Self questioning	0.64
*Prior achievement	0.63
Classroom behavioural	0.63
Teaching problem-solving	0.63
Time on-task	0.62
Vocabulary programs	0.62
Not labelling students	0.61
Direct Instruction	0.6
Repeated reading programs	0.6
Spaced practice	0.6
Study skills	0.6
Teaching strategies	0.6
Preterm birth weight	0.59
Service learning	0.58
Spelling programs	0.58
Tactile stimulation program	0.58
CAI with learning-disabled students	0.57
Mastery learning	0.57
Preschool with at risk students	0.56
CAI with other students	0.55
Cooperative learning compared to individual learning	0.55
Peer tutoring	0.55
Visual perception programs	0.55

Factor	Effect Size
Interactive video methods	0.54
Socio-economic status	0.54
Classroom cohesion	0.53
Comprehension programs	0.53
Cooperative learning compared to competitive learning	0.53
Metacognitive strategies	0.53
Peer influences	0.53
Scaffolding	0.53
Classroom management	0.52
Frequent effects of testing	0.52
Home environment	0.52
Phonics instruction	0.52
Teacher-student relationships	0.52
2nd chance programs (e.g. Reading Recovery)	0.5
Play programs	0.5
Mathematics	0.49
Parental involvement	0.49
Writing programs	0.49
Questioning	0.48
School effects	0.48
*Self-concept	0.47
Integrated curriculum programs	0.47
Small group learning	0.47
Student rating of teaching	0.47

Factor	Effect Size
Computer assisted instruction	0.45
Concentration and engagement	0.45
Relative age within the class	0.45
CAI instruction with college students	0.44
CAI with primary students	0.44
Early intervention	0.44
Motivation	0.44
Science programs	0.44
Communication strategies	0.43
Intelligent tutoring system	0.43
Outdoor adventure progress	0.43
Philosophy in schools	0.43
School size	0.43
Teacher expectations	0.43
CAI instructional in writing	0.42
Comprehensive instructional	0.42
Exposure to reading	0.42
Behavioural organisers	0.41
After-school programs	0.4
Goals	0.4
Social skills programs	0.4
Cooperative learning	0.39
Career interventions	0.38
Enrichment	0.38

Factor	Effect Size
Dramatic arts programs	0.37
Gaming simulations	0.37
Music based programs	0.37
Psychotherapy programs	0.37
Worked examples	0.37
*Reducing anxiety	0.36
Student centred learning	0.36
*Creativity	0.35
Attitude to content domains	0.35
Bilingual programs	0.35
Inquiry-based teaching	0.35
Adjunct aids	0.34
Decreasing disruptive behaviour	0.34
Various teaching on creativity	0.34
Head start programs	0.33
Inductive teaching	0.33
Preschool programs	0.33
Principals and school leaders	0.33
Drugs	0.32
*Ethnicity	0.32
Other digital tools	0.32
Teacher effects	0.32
Systems accountability	0.31
Ability grouping for gifted students	0.3

Factor	Effect Size
CAI in mathematics	0.3
CAI with high school students	0.3
Collaborative learning	0.29
Homework	0.29
Mobile phones	0.29
Desegregation	0.28
Home visiting	0.28
Early intervention in the home	0.27
Teaching test taking	0.27
Use of calculators	0.27
CAI in reading	0.26
Use of PowerPoint	0.26
Volunteer tutors	0.26
Early interventions	0.25
Married parents vs. divorced parents	0.25
Teaching reforms	0.25
Bullying	0.24
Illness	0.24
Mainstreaming	0.24
Religious schools	0.24
Values education	0.24
CAI in science	0.23
Competitive vs. individual instruction	0.23
Finances	0.23

Factor	Effect Size
Individualised instruction	0.23
Matching style of learning	0.23
Programmed instruction	0.23
Summer school	0.23
Exercise and relaxation activities	0.22
Teacher verbal ability	0.22
Visual audio/visual methods	0.22
CAI in small groups	0.21
Class size	0.21
Extracurricular programs	0.21
School cultural effects	0.2
Aptitude/treatment interactions	0.19
Learning hierarchies	0.19
School counselling effects	0.19
Team teaching	0.19
Family structure	0.18
Special college programs	0.18
Web-based learning	0.18
Within class grouping	0.18
*Personality	0.17
Adopted children	0.16
Home school programs	0.16
Teacher immediacy	0.16
Out of school curricula	0.15

Factor	Effect Size
Sentence combining programs	0.15
Distance education	0.13
Ability grouping	0.12
Diet	0.12
Juvenile delinquent programs	0.12
Problem-based learning	0.12
Teacher education	0.12
Diversity of students	0.11
Detracting	0.09
Mentoring	0.09
School calendars and timetables	0.09
Subject matter knowledge	0.09
Gender	0.08
Perceptual-motor programs	0.08
Single sex schools	0.08
Charter schools	0.07
Sleep	0.07
Types of testing	0.06
Whole language	0.06
College halls of residence	0.05
Multiage classes	0.04
CAI in distance education	0.01
Open vs. traditional classrooms	0.01
Parental employment	0.01

Factor	Effect Size
Student control over learning	0.01
Summer vacation	-0.02
Welfare policies	-0.12
Retention	-0.17
Television	-0.18
Home corporal punishment	-0.33
Mobility	-0.34
Depression	-0.42

Hattie 2016 Effect Sizes Without Outliers