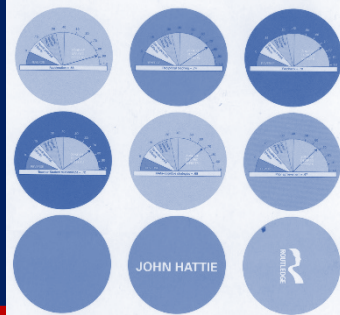


An Objective Critique of Hattie's VISIBLE LEARNING RESEARCH

by Shaun Killian, Australian Society for Evidence Based Teaching (2015)



When John Hattie first published Visible Learning in 2009, his work quickly became known as the **Holy Grail of 'all things education'**.

This isn't so surprising when you know that Visible Learning is a synthesis of over 50,000 research studies, which each explore the factors that affect how well students do at school. These factors cover everything from a child's birth weight to specific teaching strategies that you can use. It is the largest project of its type ever undertaken.

Some of his findings challenged deeply entrenched beliefs about how we should teach students (e.g. inquiry-learning). Sadly, this led to some exaggerated, misleading and very personal attacks on Hattie and his work.

All research has limitations and should be subject to critique, including the research summarised in Visible Learning. However, that does not condone mindlessly attacking research and making distorted claims just because you don't like what the research revealed.

So here is a fair and balanced critique of John Hattie's Visible Learning, covering the six key concerns expressed by other academics and practicing teachers.

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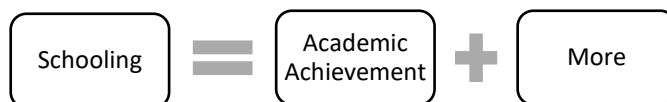
[Hattie Based His Findings On Shonky Research](#)

Concern 1

Visible Learning Focuses On Academic Results

Visible Learning shows us how much of an impact various factors have on students' academic results. Some critics take exception to this, arguing that schools are about more than just academic achievement.

Yet, Hattie does not disagree with this. He chose to focus his work on one central aspect of schooling – student achievement. This does not imply that other outcomes have no value.



Furthermore, while not the focus of the book, Visible Learning shares insight into the reciprocal relationship between social-emotional learning and academic achievement. For example:

- ✓ Genuine academic progress leads to greater self-confidence.
- ✓ Programs focused on helping students achieve better results reduce misbehaviour more than programs focused on the misbehaviour itself.

Note, **neither** of these examples denies the potential power of alternatives. You can offer programs that help increase students' confidence in tandem with pushing students to make genuine progress. In a similar vein, **you** can use behavioural strategies to reduce misconduct, while also driving students to be academically successful.

Conclusion 1

Hattie's work focuses on students' academic achievement. If you want to know what factors affect student achievement, reading Visible Learning is a must.

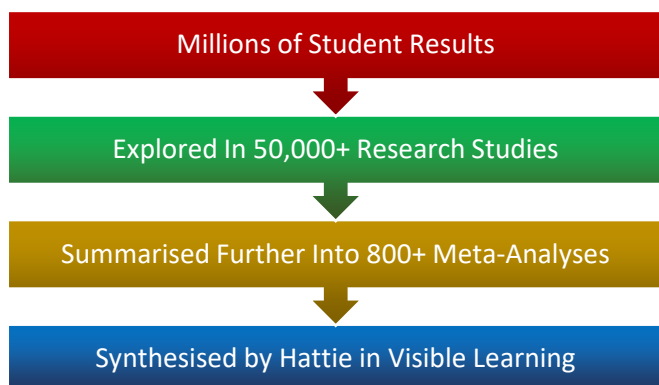
While Hattie's work touches on other aspects of student development, this is not the focus of the book. If you want to know what factors affect other aspects of student development, look beyond Visible Learning.



Concern 2

Hattie Relies On Meta-Analyses

In Visible Learning, Hattie reviews over 800 meta-analyses related to student achievement. Each of these meta-analyses is itself a review of original research studies that explore whether and the degree to which certain factors affect student achievement. In this sense, Hattie's data is based on over 50,000 individual pieces of research.



The term 'meta-analysis' was coined by Gene Glass in 1976 to describe a quantitative approach to reviewing a collection of educational research on the same topic. Put simply, a meta-analysis is a statistical technique that discerns the average impact (effect size) of a factor after exploring the effect size reported in several different studies. Since then, meta-analyses have also become common in fields such as psychology and medicine.

Meta-analyses are powerful because they:

- ✔ Bring together the collective insight of many different researchers on a single topic
- ✔ Include systemic statistical processes to enhance their reliability and validity
- ✔ Shed insight into apparent contradictions in individual research studies

However, as with any form of research, meta-analyses are not without their inherent limitations.

One common weakness is that by averaging results you can miss important nuances. For example, Hattie found that homework had a relatively small-moderate impact on student results with an effect size of 0.29. However, if you look at the underlying research, it was clear that homework has a significant effect in the senior years, and an even

lower than the reported impact in the early years. In this case, averaging the results obscures this reality.

Meta-analyses can also be hindered by the inclusion of vague variables. Take homework as an example. The nature of homework set by primary school teachers is markedly different from the kind of homework set by secondary teachers. Perhaps the variation in the impact of homework is due to the nature of homework set at different ages rather than the age of the students per se. Some of Hattie's 'factors' are indeed quite broad. In fact, this was Robert Marzano's main criticism of Hattie's work. Broad factors include vocabulary programs, professional development, study skills, early intervention and inquiry learning. People who want to adopt (or abandon) these approaches need to know, what types of vocabulary programs work, in what context, etc.

However, Hattie argues that one of his most surprising findings was the generalisability of most findings. It appears the majority of the strategies he advocates work for most students in most contexts. Of course, there are some exceptions, but Hattie argues there are far fewer than most people believe.

Conclusion

It is true that meta-analyses have inherent strengths and weaknesses.

Hattie counters the inbuilt weakness of relying on averages in the commentary he provides on each factor throughout the book. However, more prominent reporting of variance between related meta-analyses would help readers to identify areas where they should explore the underlying detail.

It would also be useful for Hattie to provide operational definitions for the various factors he reports on.

That said, Hattie's use of over 800 meta-analyses has provided compelling and unprecedented insight into the degree to which various factors affect student achievement.

Hattie's findings are robust, but simplistic interpretations of his findings can be misleading. There is a need to both:

- ✔ Unpack the subtle nuances behind his generalised findings
- ✔ Identify themes and underlying principles behind his specific examples

Concern 3

He Says SES & Class Size Don't Matter

Critics claim that Hattie dismisses factors such as students' socioeconomic status and class size. This is a misleading claim.

Class Size

Hattie actually found that reducing class size led to improvements in students' academic results, but the effect was smaller than the effect of many other factors, such as the way teachers go about their work.

Reducing class size has clear benefits in terms of reducing teacher workloads. Personally, I think this makes it a valuable action in its own right. It also creates an environment where teachers can offer more personalised learning (e.g. feedback).

Sadly, research shows that reducing class size does not automatically lead to better teaching. It may provide teachers the opportunity to do things differently, but (to date) many teachers have not taken advantage of this opportunity.

Furthermore, Hattie's review of research showed that teachers can change their practice, and in turn boost student results, without reducing class size.

Socio-Economic Status

Despite claims to the contrary, Hattie found that students' home life and socioeconomic status had a large impact on student learning ($d = 0.57$). However, he did two things that have led some to criticize his work.

- ✔ He claimed that poor kids, with bad home lives, could succeed despite the hurdles they face.
- ✔ He called for teachers and schools to focus on things they did control rather than on factors outside of their control.

Hattie highlights that teachers can make a difference despite other factors that may hinder student success. So rather than throwing our hands up in the air and saying 'if only they would ... my kids would do better', we should focus on changing things that are within our power to change.

Do what you can, with what you have, where you are
Theodore Roosevelt

Hattie does not state that we should not be trying to create a more equitable society. He does highlight that helping disadvantaged students achieve genuine academic success is possible, and that it is a way schools can nurture social equity.

Poor people cannot rely on the government to come to help you in times of need. You have to get your education. Then nobody can control your destiny.
Charles Barkley

Conclusion

Visible Learning identifies a range of factors that have an impact on students' academic success – including class size and socioeconomic status.

Hattie does not claim that either class size or socioeconomic status have no effect on student achievement. However, he does encourage teachers and others involved in education to:

- ✔ Focus on factors that are within their control.
- ✔ Spend resources (be it teacher time or money) on factors that have the largest impact.

Concern 4

Effect Size Is Not A Valid Statistical Measure

John Hattie uses a statistical measure known as *effect size* (d) to demonstrate *how much* of an effect different factors have on students' results. For example, Hattie reported that strong teacher-student relationships had a large impact ($d = 0.72$), while dietary changes had a low impact ($d = 0.12$).

Critics have argued that effect size is not a valid measure to use, stating that you won't find it mentioned in any mathematical textbooks. Yet, the *Publication Manual for the American Psychological Association (APA)* states that:

For the reader to fully understand the importance of your findings, it is almost always necessary to include some index of effect size.

You will also find whole chapters devoted to the concept of effect size in textbooks such as *Practical Statistics for Educators* by Ruth Ravid.

One of Hattie's key points is that most things that teachers do have some degree of impact on students' learning. Therefore, when making choices about which strategy to use, it is essential to know what degree of influence each strategy has.



Conclusion

Effect size is a valid statistical measure and the way it shows the degree of effect that something has, had adds vital insight to existing educational research.

Concern 5

Half Hattie's Statistics Are Wrong

Reportedly, John Hattie admitted that half the statistics in Visible Learning are wrong. Yet, Hattie himself denies ever saying this.

There are some issues with the way a particular statistical measure (CLE) was calculated, which I discuss below. But first let me clarify one thing. **The statistical errors in the book do not change any of its findings.** The relative impact of all 138 factors explored remains the same.

So while all the fuss? Hattie did make an error. In an appendix to the book Visible Learning, Hattie converted the effect sizes of each factor (i.e. their *d* score), to an alternative measure (CLE). The formula used was incorrect – it calculated *z* values rather than CLE

This was a careless error that should have been picked up in the publishing process. It means you cannot use any of the CLEs reported in the book. However, all the effect sizes are correct and these are the ones used:

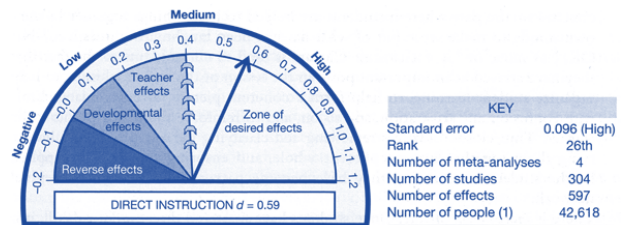
- ✔ To rank the impact of various factors
- ✔ In the widely known barometer diagrams (see below)

Conclusion

There is one particular issue with Hattie's statistics, but it makes absolutely no difference to his findings.

While latter editions of the book have corrected all errors, it would be prudent to use the *effect size* (*d*) not the *common language effect* (CLE) when reading any information off the web.

Remember that all of the barometer diagrams, such as the one above, use *effect size* (*d*).



Concern 6

Hattie Based His Findings On Shonky Research

Some academics have criticised Hattie for stating that the quality of the research underpinning his findings didn't matter.

The claim itself is misleading.

NOTE: In practical fields such as education, you can never achieve gold standard research as you can in a laboratory as there are just too many things you cannot control. There are, however, things you can do to make your studies as valid and reliable as possible.

What Hattie said was that there was no significant change in his findings, whether he included or excluded some of the poorer quality studies.

Some academics argue that you should automatically weed out low-quality studies (e.g. studies that are not randomised, studies with a low sample size, unpublished studies).

However, other academics have found there is often little difference in the effect size that emerges from a collection of:

- ✔ High-quality studies, and
- ✔ Mixed quality studies.

Therefore, Hattie (and other academics) have argued that you should include lower quality studies when such inclusion does not make a significant difference to the effect size, as it demonstrates the

effect across a larger sample and a broader range of contexts.

Hattie does not say that quality does not matter. Yet, rather than automatically ruling out low-quality studies, he advocates including all studies if statistical analysis shows that the effect size is not affected by such inclusion.

In the more recent editions of Visible Learning, Hattie excluded low-quality studies to show that it made absolutely no difference to his findings.

Conclusion

There is some academic debate about whether low-quality studies should be:

- ☑ Automatically excluded from a review of research on a particular topic.
- ☑ Excluded only if they have a significant impact on the subsequent results.

However, from a practising teacher's perspective, this debate is moot.

Hattie's findings do not change regardless of which approach you adopt.

In Closing

Visible Learning remains the most significant summary of educational research ever compiled.

As is the case with all research projects, it has its limitations and its weaknesses.

You should read all research findings with a critical eye, actively avoiding overly simplistic explanations of the findings, and this holds true for Visible Learning.

However, calls to dismiss Hattie's work are uncalled for and dangerous. Opposing his findings based on popular philosophies of teaching is nothing short of professional negligence.

Bibliography

- American Psychological Association. (2010). *Publication Manual of the American Psychological Association*. APA.
- Benseman, J., Sutton, A., & Lander, A. (2005). *Working In the Light of Evidence, As Well As Aspiration*. Wellington: Ministry of Education Auckland UniServices Ltd.
- Glass, G. V. (1976). Primary, Secondary, and Meta-Analysis of Research. *Educational Researcher*, 5(10), 3-8.
- Glass, G. V. (2000, January). *Meta-Analyses at 25*. Retrieved from Gene V Glass: <http://www.gvglass.info/papers/meta25.html>
- Haesler, D. (n.d.). *Is John talking through his Hattie?* Retrieved from Dan Haesler: <http://danhaesler.com/2014/11/17/is-john-talking-through-his-hattie/>
- Hattie, J. (2013). *Visible Learning: A Synthesis of 800 Meta-Analyses Relating to Achievement*. Routledge.
- Kisamore, J. L., & Brannick, M. T. (2008). An Illustration of the Consequences of Meta-Analysis Model Choice. *Organizational Research Methods*, 11(1), 35-53.
- Marzano, R. J. (1998). *A Theory-Based Meta-Analysis of Research On Instruction*. Aurora, Colorado: Mid-Continent Regional Education Lab.
- Ollie Orange (pseudonym), (2014, August 25). *John Hattie Admits that Half of the Statistics in Visible Learning are Wrong*. Retrieved from OllieOrange2: <https://ollieorange2.wordpress.com/2014/08/25/people-who-think-probabilities-can-be-negative-shouldnt-write-books-on-statistics/>
- Ravid, R. (2014). *Practical Statistics for Educators*. Rowman & Littlefield.
- Scriven, M. (2005). Causation. In S. Mathison (Ed.), *Encyclopedia of Evaluation*. Thousand Oaks: Sage.
- Snook, I., O'Neill, J., Clark, J., O'Neill, A.-M., & Openshaw, R. (2009). Invisible Learnings?: A Commentary on John Hattie's Book - 'Visible Learning: A Synthesis of Over 800 Meta-analyses Relating to Achievement'. *New Zealand Journal of Educational Studies*, 44(1), 93-106.