

VISIBLE LEARNING: The Sequel

A SYNTHESIS OF OVER
2,100 META-ANALYSES
RELATING TO ACHIEVEMENT



Dieci falsi miti e dieci regole per insegnare bene

Antonio Calvani
Roberto Trinchero



Carocci Faber

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S. Ap. I. E.

Società per l'Apprendimento e
l'Istruzione informati da Evidenza

LA PEDAGOGIA TRA RICERCA SCIENTIFICA E MITOLOGIE INGENUE.

Le cose che tutti gli insegnanti dovrebbero sapere...

ANTONIO CALVANI
ROBERTO TRINCHERO

1. «Un metodo vale l'altro, basta che l'insegnante ci creda e sia pratici con passione...»;
2. «Per formare gli allievi è importante la didattica, non la valutazione...»;
3. «Bisogna abolire la lezione frontale...»;
4. «Il bambino dovrebbe lavorare come lo stesso del ricercatore...»;
5. «Le tecnologie migliorano (o peggiorano) l'apprendimento!»;
6. «Tanti più stimoli e materiali offrono agli allievi, tanto meglio è...»;
7. «Bisogna partire dalla didattica...»;
8. «Gli allievi si apprendono meglio se lasciati sperimentare da soli...»;
9. «Bisogna ascoltare gli stili di apprendimento dell'allievo!»;
10. «Con l'approccio *flipped* si può innovare la scuola...».

1. «Un metodo vale l'altro, basta che l'insegnante ci creda e lo pratichi con passione...»

→ I **metodi didattici** applicati da parte di insegnanti esperti possono **fare una differenza rilevante** (Hattie, 2016, 2023)

Table 2.2 Summary statistics for each domain

Domain	No. metas	No. of studies	Estimated total no.	No. of effects	Effect size	Weighted ES	SE
Student	373	26,245	67,186,805	104,174	0.24	0.23	0.06
Home	117	6,676	24,192,643	16,696	0.15	0.15	0.08
School	146	7,446	10,510,357	26,150	0.19	0.20	0.06
Classroom	120	4,752	10,686,418	18,689	0.21	0.22	0.06
Teacher	81	3,837	7,104,805	8,310	0.53	0.55	0.05
Curriculum	377	17,228	20,639,762	52,289	0.50	0.50	0.08
Student learning	278	15,821	3,726,064	30,694	0.55	0.53	0.09
Teaching strategies	423	29,867	11,758,883	56,751	0.51	0.51	0.09
Technology	350	18,905	7,445,108	52,917	0.56	0.54	0.09
School and out-of-school strategies	48	1,612	43,887,942	6,406	0.25	0.24	0.05
Total	2,313	132,389	207,136,787	353,076	0.42	0.42	0.07

Hattie, J. (2023). *Visible learning: the sequel. A synthesis of over 2.100 meta-analyses relating to achievement*. London New York: Routledge Taylor & Francis Group.

2. «Per formare gli allievi è importante la didattica, non la valutazione...»

→ Adottare test di **autovalutazione** e strategie di **valutazione formativa** incide in modo rilevante sugli apprendimenti ottenuti (Fiorella e Mayer, 2015; Hattie, 2017; Hattie, 2023) e non sarebbe possibile dare **feedback** se l'allievo non venisse messo alla prova

Table 11.2 Summary statistics for feedback variables

Feedback	No. metas	No. studies	Total no.	No. effects	Weighted ES	SE
Feedback	9	1,005	61,164	3,117	0.51	0.08
Feedback (self)	2	103	9,480	103	0.14	0.08
Feedback (from students)	12	300	26,732	429	0.47	0.08
Feedback (reinforcement and cues)	3	108	21,053	211	1.01	0.08
Feedback (tasks and processes)	11	161	14,552	222	0.63	0.12
Feedback (from tests)	3	72	6,027	90	0.41	0.05
Feedback (comments vs. grades)	3	27	2,485	103	0.19	0.05
Feedback (technology)	2	62	6,291	92	0.55	0.08
Feedback (timing)	2	134	29,352	134	0.89	0.08
Productive failure (errors)	3	89	8,165	213	0.39	0.10
Peer- and self-grading	8	179	18,290	233	0.54	0.16
Formative evaluation	6	236	138,747	905	0.40	0.06
Alternative assessment methods	4	78	17,496	88	0.67	0.09
Peer assessment	2	91	8,375	178	0.41	0.09
Frequent testing	2	101	17,570	286	0.30	0.05
Effects of testing	7	728	7,081,731	2,168	0.59	0.03
Questioning	9	270	22,590	330	0.49	0.10
Classroom discussion	1	42	3,866	42	0.82	0.00
Total/average	90	3896	7,495,477	9,044	0.54	0.06

3. «Bisogna abolire la lezione frontale!»

→ «Frontalità» non significa monologo dell'insegnante: la lezione è efficace quando l'insegnante dà **consegne chiare, fa agire gli allievi** e sposta i suoi interventi principalmente sui momenti di **feedback** (Hattie, 2016)

Table 11.1 Summary statistics for learning intentions, success criteria, and depth of complexity

Learning intentions	No metas	No studies	Total no.	No effects	Weighted ES	SE
Clear goal intentions	7	504	97,824	613	0.44	0.04
Advance organizers	12	935	87,015	2,291	0.41	0.04
Planning and prediction	3	157	14,450	178	0.83	0.08
Learning hierarchies approach	1	24	2,209	24	0.19	0.00
Concept mapping	12	1,262	115,467	1,429	0.62	0.08
Success criteria	2	163	15,002	163	0.64	0.08
Appropriately challenging goals	6	375	36,955	473	0.60	0.06
Goal commitment	3	103	9,907	112	0.44	0.08
Mastery learning	17	814	76,638	667	0.67	0.10
Worked examples	2	83	5,257	179	0.47	0.04
Depth of complexity						
Task complexity	3	331	213,627	413	0.62	0.08
Cognitive task analysis	2	27	2,485	95	1.09	0.11
Total/average	70	4,778	676,835.79	6,637	0.58	0.04

4. «Il bambino dovrebbe lavorare con lo stesso metodo del ricercatore...»

→ Presentare agli allievi problemi e metodi nelle forme proprie dello specialista significa provocare **sovraccarico cognitivo** e dunque dispersività e frustrazione (Kirschner, Sweller, Clark, 2006)

Table 13.2 Summary statistics for teaching knowing-how

Teaching for knowing-how/with	No. metas	No. studies	Total no.	No. effects	Weighted ES	SE
Problem-based learning	27	991	159,856	1,598	0.45	0.11
Problem-solving teaching	11	639	59,305	1,313	0.61	0.08
Flipped classrooms	48	2,492	302,850	3,303	0.56	0.12
Inquiry-based teaching	13	450	51,761	650	0.50	0.11
Inductive teaching	3	171	8,600	171	0.60	0.05
Reciprocal teaching	2	28	2,150	52	0.74	0.08
Discovery-based teaching	2	193	17,763	394	0.27	0.08
Contextualized teaching	1	151	11,718	241	0.22	0.08
Scaffolding and situated learning	7	274	31,362	681	0.52	0.10
Collaborative learning	12	955	91,731	1,082	0.45	0.07
Cooperative learning	37	1,376	144,534	2,258	0.53	0.08
Cooperative vs. competitive learning	8	1,031	100,018	960	0.58	0.11
Cooperative vs. individualistic learning	5	959	108,659	906	0.62	0.07
Competitive vs. individualistic learning	4	831	76,484	203	0.27	0.23
Philosophy in schools	3	38	4,860	38	0.54	0.04
Out-of-class communication	1	11	7,113	11	0.54	0.08
Mentoring	5	175	27,812	671	0.18	0.05
Jigsaw method	1	37	3,405	37	1.20	0.00
Total/average	193	10,815	1,213,011	14,562	0.56	0.08

5. «Le tecnologie migliorano (o peggiorano) l'apprendimento!»

→ Vanno distinte le **tipologie applicative** e i **modi di usarle** (Vivanet, 2017)

Table 14.1 Summary statistics for technology variables

Technology	No. metas	No. studies	Total no.	No. effects	Weighted ES	SE
Information and computer technology	63	4,280	576,861	7,292	0.51	0.08
Technology with elementary students	6	264	24,298	664	0.44	0.05
Technology with high school students	9	680	72,131	760	0.30	0.05
Technology with college students	15	1,962	226,621	1,786	0.34	0.08
Distance or online education	28	1,499	4,182,905	2,440	0.25	0.07
Webinars	1	15	591	36	0.33	0.09
One-on-one laptops	1	10	920	10	0.16	0.04
FaceTime and social media	3	72	123,728	72	-0.12	0.05
Technology in mathematics	25	1,118	309,212	2,216	0.37	0.07
Technology in science	6	391	39,048	567	0.18	0.08
Technology in reading/literacy	17	736	180,647	1,547	0.26	0.09
Technology in writing	4	76	5,840	81	0.41	0.10
Technology in other subjects	3	96	7,838	103	0.58	0.08
Technology with learning needs students	5	125	16,390	152	0.60	0.05
Technology with gifted students	5	125	16,390	152	0.17	0.08
Intelligent tutoring systems	5	283	30,520	288	0.52	0.03
Use of Power Point	1	12	1,181	16	0.26	0.08
Smart boards	2	72	6,627	72	0.89	0.09

5. «Le tecnologie migliorano (o peggiorano) l'apprendimento!»

→ Vanno distinte le **tipologie applicative** e i **modi di usarle** (Vivanet, 2017)

Online and digital tools	12	489	106,437	1,440	0.36	0.10
Virtual reality	20	699	67,054	721	0.57	0.11
Robotics	4	87	8,287	87	0.57	0.13
Interactive video/ multimedia	9	432	42,444	3,987	0.54	0.08
Clickers	2	122	22,266	226	0.21	0.15
Simulations	14	700	62,162	1,087	0.53	0.09
Gaming	43	1,985	262,920	2,955	0.41	0.14
Web-based learning	7	291	52,188	544	0.40	0.25
Mobile/touch devices/ tablets	20	1,003	115,058	2,267	0.59	0.11
Presence of mobile phones	3	93	297,746	95	-0.27	0.08
Screen time	1	38	188,172	38	0.23	0.19
Audio/visual methods	9	487	44,435	359	0.29	0.07
Programmed instruction	8	493	45,375	391	0.24	0.08
Total/average	307	16,920	7,180,188	29,962	0.34	0.08

6. «Tanti più stimoli informativi si offrono agli allievi, tanto meglio è...»

→ Troppi stimoli **non ricordati alle preconcoscenze** dell'allievo generano sovraccarico cognitivo e vengono dimenticati (Kirschner, Sweller, Clark, 2006);

Table 5.2 Summary statistics for the skill-related student variables

Skill	No. metas	No. studies	Total no.	No. effects	Weighted ES	SE
Prior ability and intelligence	5	1,128	572,240	1,703	0.96	0.02
Prior achievement	11	1,862	785,667	6,120	0.73	0.07
Relations of high school to university	7	2,155	164,054	7,101	0.55	0.05
Relation of high school to career performance	2	147	36,756	147	0.37	0.02
Piagetian levels	1	51	6,000	65	1.28	0.08
Executive functioning	2	314	73,552	314	0.62	0.05
Working memory strength	4	437	58,287	4,107	0.63	0.08
Early years noncognitive skills	1	78	7,179	78	0.20	0.08
Cross-laterality	1	26	3,578	26	-0.03	0.00
Field independence	2	46	4,423	157	0.94	0.05
Self-reported grades	6	218	30,347	427	0.96	0.11
Relating creativity to achievement	5	269	110,239	1,618	0.40	0.09
Critical thinking	3	94	14,768	114	0.84	0.08
Total/average	50	6,825	1,867,089	21,977	0.70	0.26

7. «Bisogna partire dalla pratica!»

→ Non è il partire dalla pratica che fa la differenza ma dall'**attivazione di preconoscenze e modelli di pensiero che gli allievi già possiedono** (ibid.; Gagné, Briggs, 1990; Marzano, Pickering, Pollock, 2001; Merrill, 2002; Hattie, 2009; 2017);

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Total/average	50	6,825	1,867,089	21,977	0.70	0.26

8. «Gli allievi apprendono meglio se lasciati sperimentare da soli...»

→ La **guida istruttiva del docente** è un elemento fondamentale per orientare gli sforzi dell'allievo (Marzano, Pickering, Pollock, 2001; Hattie, 2009; 2015; 2017);

Table 13.1 Summary statistics for teaching knowing-that

Teaching for knowing-that	No. metas	No. studies	Total no.	No. effects	Weighted ES	SE
Direct Instruction	8	3,052	563,150	10,392	0.56	0.08
Explicit teaching strategies	21	5,976	1,584,597	13,333	0.63	0.09
Cognitive behavioral programs	1	5	460	5	0.29	0.00
Lectures	3	273	27,296	614	-0.26	0.08
Co-/team teaching	8	327	32,933	494	0.21	0.12
Response to intervention	8	180	21,907	689	0.73	0.11
Adjunct aids	15	408	121,824	790	0.64	0.09
Immediacy	1	16	5,437	16	0.16	0.00
Background music	2	79	6,417	79	0.08	0.07
Humor	1	20	4,801	21	0.04	0.00
Total/average	68	10,336	2,368,822.3	26,433	0.31	0.06

9. «Bisogna assecondare gli stili di apprendimento dell'allievo!»

→ Non vi sono evidenze che gli allievi con un presunto «stile cognitivo» abbiano punteggi più alti nei compiti che coinvolgono quello stile (Kratzig e Arbutnott, 2006);

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Critical thinking	3	94	14,768	114	0.84	0.08
Total/average	50	6,825	1,867,089	21,977	0.70	0.26

10. «Con l'approccio *flipped* si può innovare la scuola...»

→ L'unico vantaggio tangibile sembra essere quello dell'**anticipazione di contenuti** che verranno ripresi dopo (Raffaghelli, 2017).

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Inductive teaching	3	171	8,600	171	0.60	0.05
Reciprocal teaching	2	38	2,150	53	0.74	0.08
Discovery-based teaching	2	193	17,763	394	0.27	0.08
Constructivist teaching	4	154	14,745	241	0.92	0.08
Scaffolding and situated learning	7	274	31,362	681	0.52	0.10
Collaborative learning	12	955	91,734	1,082	0.45	0.07
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Calvani A., Trinchero R. (2019), *10 falsi miti e 10 regole per insegnare bene*, Roma, Carocci.

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Contatti: info@sapie.it