

Feedback

Very high impact for very low cost based on extensive evidence

Feedback is information given to the learner about the learner's performance relative to learning goals or outcomes.

Implementation cost



Evidence strength



Impact (months)



Subject breakdown

maths: 22
reading: 56
toolkit: 155

School phase breakdown

primary: 83
secondary: 71
toolkit: 155

Technical Appendix

The criteria used to judge the inclusion of studies in the Toolkit are:

- The population sampled involved early years and school age learners from 3-18 learning in their first language.
- The intervention or approach being tested was educational in nature, including named or clearly defined programmes and recognisable approaches classifiable according to the Toolkit strand definitions (e.g. peer tutoring or small group teaching). The intervention or approach is undertaken in a normal educational setting or environment for the learners involved, such as a nursery or school or a typical setting (e.g. an outdoor field centre or museum).
- A valid comparison was made between those receiving the educational intervention or approach and those not receiving it.
- Outcomes include the assessment of educational or cognitive achievement which reports quantitative results from testing of attainment or learning outcomes, such as by standardised tests or other appropriate curriculum assessments or school examinations or appropriate cognitive measures.
- The study design provided a quantitative estimate of the impact of the intervention or approach on the educational attainment of the sample, calculated or estimated in the form of an effect size (standardised mean difference) based on a counterfactual comparison.

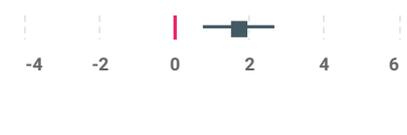
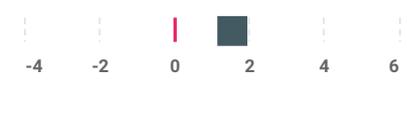
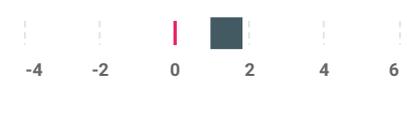
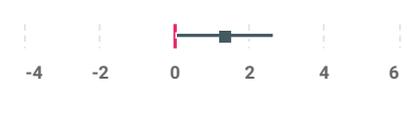
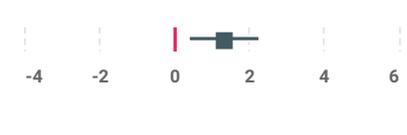
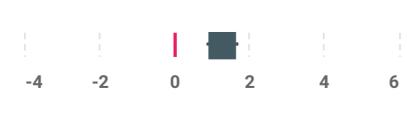
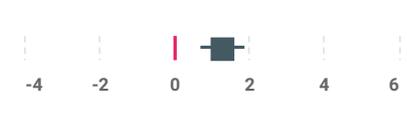
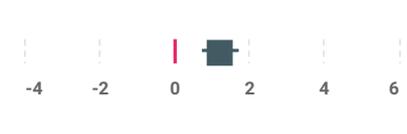
Standardised mean differences and confidence intervals for the most appropriate estimates of the impact of the intervention or approach for the Toolkit were extracted from each included study, along with other study variables. These effect sizes were further synthesised into a single pooled effect using a random effects meta-analysis adopting a restricted maximum likelihood (REML) estimation methods. For the full details of the methodology see the [Protocol and Analysis Plan \(https://educationendowmentfoundation.org.uk/public/files/Toolkit/EEF_Evidence_Database_Protocol_and_Analysis_Plan_June2019.pdf\)](https://educationendowmentfoundation.org.uk/public/files/Toolkit/EEF_Evidence_Database_Protocol_and_Analysis_Plan_June2019.pdf).

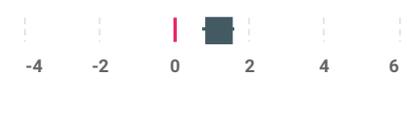
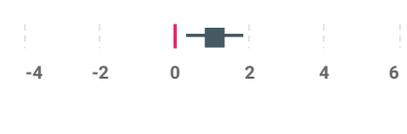
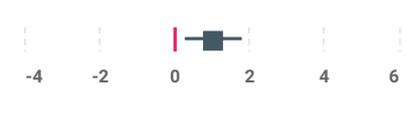
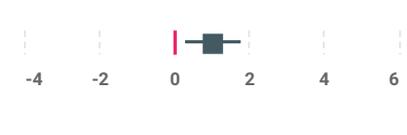
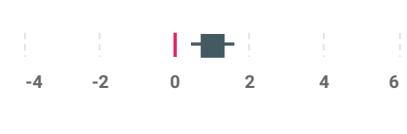
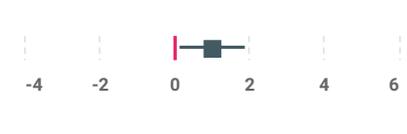
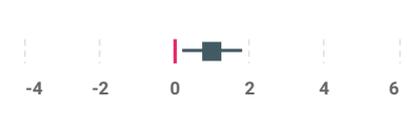
References (155)

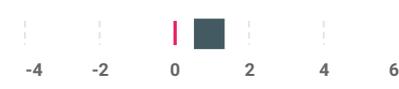
The forest plot below is a graphical representation of the results of all included studies in this Toolkit strand. It shows the effect size and confidence interval of each study, and whether the particular intervention in that study was more or less effective than standard practice or other alternative interventions that the study looked at.

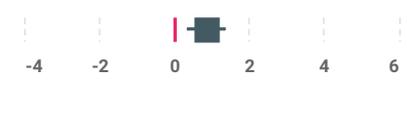
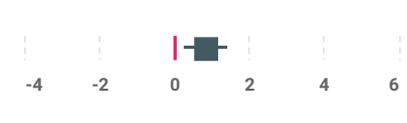
Studies that show an effect size result on the right-hand side of the red vertical red indicate that the particular intervention studied was more effective than standard practice. Studies that show an effect size on the left-hand side of the red vertical indicate that the particular intervention studied was less effective than standard practice.

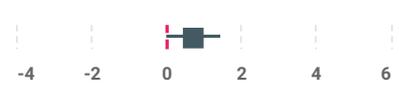
Author	Title	Effect Size	Effect Size (Graph)
Bohannon (1975)	Direct and daily measurement procedures in the identification and treatment of reading behaviours in children in special education (NA)	Effect Size: 2.75 LCI: 1.456 UCI: 4.044 Weight: 0.28 Standard error: 0.66	
Bilsky (1978)	Facilitation of class-inclusion performance in low attaining adolescents: Feedback and strategy training (<i>American Journal of Mental Deficiency</i>)	Effect Size: 2.429 LCI: 1.634 UCI: 3.224 Weight: 0.486 Standard error: 0.406	
Schunk (1993) 1_2	Goals and progress feedback: Effect on self-efficacy and writing achievement (<i>Contemporary Educational Psychology</i>)	Effect Size: 2.338 LCI: 1.145 UCI: 3.53 Weight: 0.312 Standard error: 0.608	
Guastello (2001) FB	Parents as partners: Improving children's writing (<i>Celebrating the Voices of Literacy: The Twenty-Third Yearbook of the College Reading Association: A Peer Reviewed Publication of the College Reading Association</i>)	Effect Size: 2.18 LCI: 1.792 UCI: 2.568 Weight: 0.734 Standard error: 0.198	
Tenenbaum (1986) FB	The Effect of Quality of Instruction on Higher and Lower Mental Processes and on the Prediction of Summative Achievement (<i>The Journal of Educational Research</i>)	Effect Size: 1.964 LCI: 1.526 UCI: 2.402 Weight: 0.703 Standard error: 0.224	
Johansen (1983)	Effect of adaptive advisement on perception in linear-controlled, computer-based instruction using a rule-learning task. (<i>Educational Communication and Technology Journal</i>)	Effect Size: 1.716 LCI: 1.017 UCI: 2.415 Weight: 0.54 Standard error: 0.357	

Author	Title	Effect Size	Effect Size (Graph)
Sonnenschein (1986)	Developing referential communication: Transfer across novel tasks <i>(Bulletin of the Psychonomics Society)</i>	Effect Size: 1.7 LCI: 0.72 UCI: 2.68 Weight: 0.395 Standard error: 0.5	
Butler (1986) 1_1	Effects of no feedback, task-related comments, and grades on intrinsic motivation and performance <i>(Journal of Educational Psychology)</i>	Effect Size: 1.539 LCI: 1.198 UCI: 1.88 Weight: 0.761 Standard error: 0.174	
Elawar (1985)	A Factorial Experiment in Teachers' Written Feedback on Student Homework: Changing Teacher Behavior a Little Rather Than a Lot <i>(Journal of Educational Psychology)</i>	Effect Size: 1.354 LCI: 1.117 UCI: 1.591 Weight: 0.815 Standard error: 0.121	
Zimmerman (1977)	Teaching through demonstration. The effects of structuring, imitation and age <i>(Journal of Educational Psychology)</i>	Effect Size: 1.332 LCI: 0.027 UCI: 2.638 Weight: 0.277 Standard error: 0.666	
Feng (1983) 1_1	The Effect of Three Different Kinds of Feedback: Hint, Correct Answer, and Right/Wrong. Working Paper No. 11 <i>(NA)</i>	Effect Size: 1.313 LCI: 0.371 UCI: 2.255 Weight: 0.412 Standard error: 0.481	
Young (2000)	Enhancing student writing by teaching self-assessment strategies that incorporate the criteria of good writing <i>(NA)</i>	Effect Size: 1.281 LCI: 0.941 UCI: 1.621 Weight: 0.762 Standard error: 0.174	
Butler (1987) 1_1	Task-involving and ego-involving properties of evaluation: Effects of different feedback conditions on motivational perceptions, interest, and performance <i>(Journal of Educational Psychology)</i>	Effect Size: 1.268 LCI: 0.817 UCI: 1.719 Weight: 0.695 Standard error: 0.23	
Paquette (2009) 1_2	Integrating the 6 + 1 writing traits model with cross-age tutoring: An investigation of elementary students' writing development <i>(Literacy Research and Instruction)</i>	Effect Size: 1.268 LCI: 0.656 UCI: 1.88 Weight: 0.593 Standard error: 0.312	
Khine (1996) FB 1_1	The Interaction of Cognitive Styles with Varying Levels of Feedback in Multimedia Presentation <i>(International Journal of Instructional Media)</i>	Effect Size: 1.211 LCI: 0.695 UCI: 1.727 Weight: 0.654 Standard error: 0.263	

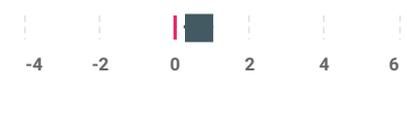
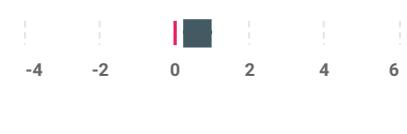
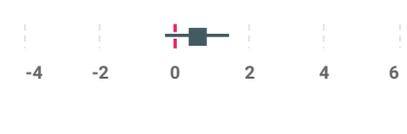
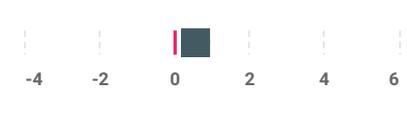
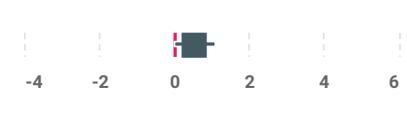
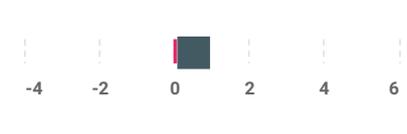
Author	Title	Effect Size	Effect Size (Graph)
Haring (1975)	Evaluation of a program of systematic instructional procedures for extremely poor low attainers <i>(American Journal of Mental Deficiency)</i>	Effect Size: 1.157 LCI: 0.574 UCI: 1.74 Weight: 0.611 Standard error: 0.297	
Anderson (1973)	Time and school learning <i>(NA)</i>	Effect Size: 1.155 LCI: 0.702 UCI: 1.607 Weight: 0.694 Standard error: 0.231	
Butler (1986) 1_2	Effects of no feedback, task-related comments, and grades on intrinsic motivation and performance <i>(Journal of Educational Psychology)</i>	Effect Size: 1.118 LCI: 0.798 UCI: 1.439 Weight: 0.773 Standard error: 0.164	
MacArthur (1991)	Effects of a reciprocal peer revision strategy in special educational classrooms <i>(Learning Disabilities Research)</i>	Effect Size: 1.059 LCI: 0.271 UCI: 1.847 Weight: 0.489 Standard error: 0.402	
Brandstetter (1978) 1_1	Charting scores in precision teaching for skill acquisition <i>(Exceptional Children)</i>	Effect Size: 1.022 LCI: 0.234 UCI: 1.809 Weight: 0.49 Standard error: 0.402	
Schunk (1993) 1_1	Goals and progress feedback: Effect on self-efficacy and writing achievement <i>(Contemporary Educational Psychology)</i>	Effect Size: 1.011 LCI: 0.245 UCI: 1.778 Weight: 0.501 Standard error: 0.391	
Perkins (1988)	Feedback effects on oral reading errors of children with learning disabilities <i>(Journal of Learning Disabilities)</i>	Effect Size: 1.008 LCI: 0.404 UCI: 1.611 Weight: 0.598 Standard error: 0.308	
Schunk (1993)	Writing strategy instruction with gifted students: Effects of goals and feedback on self-efficacy and skills <i>(Roeper Review)</i>	Effect Size: 0.992 LCI: 0.096 UCI: 1.888 Weight: 0.434 Standard error: 0.457	
Feng (1983) 1_2	The Effect of Three Different Kinds of Feedback: Hint, Correct Answer, and Right/Wrong. Working Paper No. 11 <i>(NA)</i>	Effect Size: 0.991 LCI: 0.167 UCI: 1.816 Weight: 0.47 Standard error: 0.421	

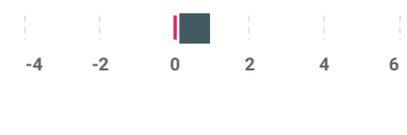
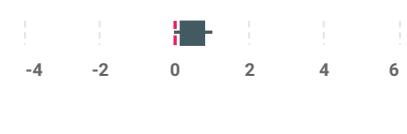
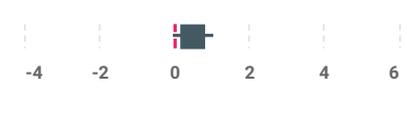
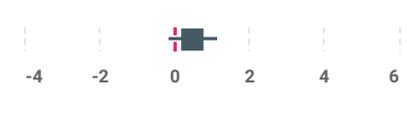
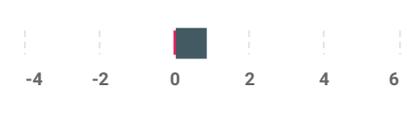
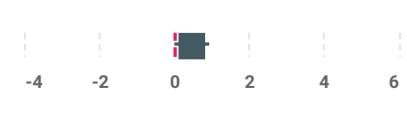
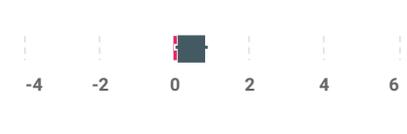
Author	Title	Effect Size	Effect Size (Graph)
Wolter (1975) 1_1	Effect of feedback on performance on a creative writing task (NA)	Effect Size: 0.958 LCI: -0.037 UCI: 1.953 Weight: 0.388 Standard error: 0.508	
Wolter (1975) 1_2	Effect of feedback on performance on a creative writing task (NA)	Effect Size: 0.926 LCI: -0.033 UCI: 1.885 Weight: 0.404 Standard error: 0.49	
Clariana (1990)	A Comparison of Answer until Correct Feedback and Knowledge of Correct Response Feedback under Two Conditions of Contextualization (<i>Journal of Computer-Based Instruction</i>)	Effect Size: 0.924 LCI: 0.614 UCI: 1.234 Weight: 0.779 Standard error: 0.158	
McClintock (1975)	The effects of manipulating feedback upon children's motives and performance: A propositional statement and empirical evaluation (<i>Behavioral Science</i>)	Effect Size: 0.91 LCI: 0.617 UCI: 1.204 Weight: 0.788 Standard error: 0.15	
Reid (1988)	Generalization of training speaking skills: The role of overt activity, feedback, and child's initial level of competence (<i>Perceptual and Motor Skills</i>)	Effect Size: 0.9 LCI: 0.116 UCI: 1.684 Weight: 0.492 Standard error: 0.4	
Llorens (2016) 1_3	Formative feedback to transfer self-regulation of task-oriented reading strategies (<i>Journal of Computer Assisted Learning</i>)	Effect Size: 0.884 LCI: 0.408 UCI: 1.359 Weight: 0.679 Standard error: 0.243	
Andrade (2008)	Putting rubrics to the test: The effect of a model, criteria generation, and rubric-referenced self-assessment on elementary school students' writing (<i>Educational Measurement: Issues and Practice</i>)	Effect Size: 0.865 LCI: 0.476 UCI: 1.254 Weight: 0.733 Standard error: 0.198	
Bethge (1982)	The effects of dynamic assessment procedures on Raven Matrices performance, visual search behavior, test anxiety and test orientation (<i>Intelligence</i>)	Effect Size: 0.855 LCI: 0.262 UCI: 1.448 Weight: 0.605 Standard error: 0.303	
Wade-Stein (2004)	Summary Street: Interactive computer support for writing (<i>Cognition and Instruction</i>)	Effect Size: 0.852 LCI: 0.283 UCI: 1.422 Weight: 0.619 Standard error: 0.291	

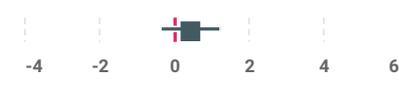
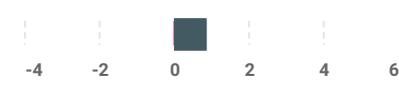
Author	Title	Effect Size	Effect Size (Graph)
Brakel (1990)	The Revising Processes of Sixth-Grade Writers With and Without Peer Feedback (<i>Journal of Educational Research</i>)	Effect Size: 0.846 LCI: 0.189 UCI: 1.502 Weight: 0.565 Standard error: 0.335	
Farrell (1977)	A comparison of three instructional approaches for teaching written composition to high school juniors: Teacher lecture, peer evaluation, and group tutoring (NA)	Effect Size: 0.835 LCI: 0.29 UCI: 1.38 Weight: 0.635 Standard error: 0.278	
Kolic-Vehovec (2002) FB	Self-monitoring and attribution training with poor readers (<i>Studia Psychologica</i>)	Effect Size: 0.835 LCI: 0.338 UCI: 1.333 Weight: 0.665 Standard error: 0.254	
Kramarski (2009) FB	Group-Metacognitive Support for Online Inquiry in Mathematics with Differential Self-Questioning (<i>Journal of Educational Computing Research</i>)	Effect Size: 0.831 LCI: 0.334 UCI: 1.329 Weight: 0.665 Standard error: 0.254	
Crutcher (1975)	Effective use of objectives and monitoring (<i>Teaching Exceptional Children</i>)	Effect Size: 0.822 LCI: 0.328 UCI: 1.315 Weight: 0.668 Standard error: 0.252	
Dollinger (1978)	Overjustification and Children's Intrinsic Motivation: Comparative Effects of Four Rewards (<i>Journal of Personality and Social Psychology</i>)	Effect Size: 0.817 LCI: 0.167 UCI: 1.466 Weight: 0.57 Standard error: 0.331	
Hughes (1973)	An experimental investigation of the effects of pupil responding and teacher reacting on pupil achievement (<i>American Educational Research Journal</i>)	Effect Size: 0.815 LCI: 0.309 UCI: 1.321 Weight: 0.66 Standard error: 0.258	
Tait (1973) 1_1	Feedback procedures in computer-assisted arithmetic instruction (<i>British Journal of Educational Psychology</i>)	Effect Size: 0.814 LCI: 0.21 UCI: 1.418 Weight: 0.598 Standard error: 0.308	
Algozzine (2009)	Using Peer Coaches to Build Oral Reading Fluency (<i>Journal of Education for Students Placed at Risk</i>)	Effect Size: 0.795 LCI: 0.387 UCI: 1.203 Weight: 0.722 Standard error: 0.208	

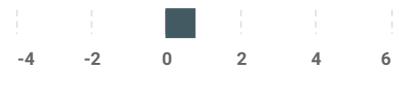
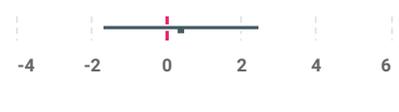
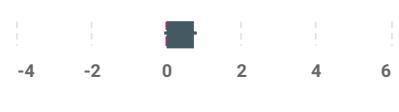
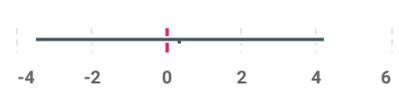
Author	Title	Effect Size	Effect Size (Graph)
Tait (1973) 1_2	Feedback procedures in computer-assisted arithmetic instruction <i>(British Journal of Educational Psychology)</i>	Effect Size: 0.769 LCI: 0.177 UCI: 1.361 Weight: 0.606 Standard error: 0.302	
Tenenbaum (1982) FB 1_1	A method of group instruction which is as effective as one-to-one tutorial instruction. <i>(ProQuest Dissertations and Theses)</i>	Effect Size: 0.751 LCI: 0.222 UCI: 1.28 Weight: 0.645 Standard error: 0.27	
Peeck (1985) 1_1	Effects of informative feedback in relation to retention of initial responses <i>(Contemporary Educational Psychology)</i>	Effect Size: 0.744 LCI: 0.255 UCI: 1.233 Weight: 0.671 Standard error: 0.25	
Peeck (1985) 1_2	Effects of informative feedback in relation to retention of initial responses <i>(Contemporary Educational Psychology)</i>	Effect Size: 0.744 LCI: 0.255 UCI: 1.233 Weight: 0.671 Standard error: 0.25	
Van Oudenhoven (1987) FB	Effect of cooperation and shared feedback on spelling achievement <i>(Journal of Educational Psychology)</i>	Effect Size: 0.74 LCI: -2.592 UCI: 4.072 Weight: 0.058 Standard error: 1.7	
Merrett (1996) FB	How important is the praise element in the pause, prompt and praise tutoring procedures for older low-progress readers? <i>(Educational Psychology)</i>	Effect Size: 0.716 LCI: -0.468 UCI: 1.901 Weight: 0.315 Standard error: 0.604	
Chen (2011)	Augmenting Paper-Based Reading Activity with Direct Access to Digital Materials and Scaffolded Questioning <i>(Computers & Education)</i>	Effect Size: 0.711 LCI: 0.053 UCI: 1.369 Weight: 0.565 Standard error: 0.336	
Fitzgerald (1987)	Teaching children about revision in writing <i>(Cognition and Instruction)</i>	Effect Size: 0.7 LCI: -0.045 UCI: 1.445 Weight: 0.513 Standard error: 0.38	
Tomita (2008)	Examining the influence of formative assessment on conceptual accumulation and conceptual change <i>(NA)</i>	Effect Size: 0.7 LCI: -0.084 UCI: 1.484 Weight: 0.492 Standard error: 0.4	

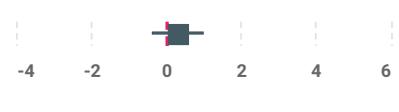
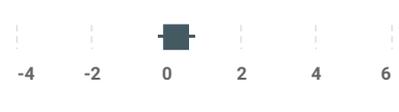
Author	Title	Effect Size	Effect Size (Graph)
Vidal-Abarca (2014)	TuinLEC, an intelligent tutoring system to improve reading literacy skills / TuinLEC, un tutor inteligente para mejorar la competencia lectora (<i>Infancia y Aprendizaje</i>)	Effect Size: 0.688 LCI: -0.123 UCI: 1.5 Weight: 0.477 Standard error: 0.414	
Eggen (1978)	The effect of hierarchical cues on the learning of concepts from prose materials (<i>Journal of Experimental Education</i>)	Effect Size: 0.685 LCI: 0.077 UCI: 1.293 Weight: 0.595 Standard error: 0.31	
Llorens (2014) 1_2	Adaptive formative feedback to improve strategic search decisions in task-oriented reading (<i>Journal of Computer Assisted Learning</i>)	Effect Size: 0.675 LCI: 0.144 UCI: 1.206 Weight: 0.644 Standard error: 0.271	
Llorens (2014) 1_1	Adaptive formative feedback to improve strategic search decisions in task-oriented reading (<i>Journal of Computer Assisted Learning</i>)	Effect Size: 0.675 LCI: 0.144 UCI: 1.206 Weight: 0.644 Standard error: 0.271	
Roussey (1992) FB	Effects of social regulation and computer assistance on the monitoring of writing (<i>European Journal of Psychology of Education</i>)	Effect Size: 0.667 LCI: 0.217 UCI: 1.117 Weight: 0.695 Standard error: 0.23	
Lumbelli (1999)	Improving the ability to detect comprehension problems: From revising to writing (<i>Learning and Instruction</i>)	Effect Size: 0.664 LCI: -0.1 UCI: 1.428 Weight: 0.503 Standard error: 0.39	
Wise (1992) FB	The effects of revision instruction on eighth graders' persuasive writing (NA)	Effect Size: 0.656 LCI: 0.224 UCI: 1.089 Weight: 0.706 Standard error: 0.221	
Baechie (1990)	The effects of direct feedback and practice on metaphor performance in children with learning disabilities (<i>Journal of Learning Disabilities</i>)	Effect Size: 0.655 LCI: 0.095 UCI: 1.214 Weight: 0.626 Standard error: 0.286	
Lacher (1983)	Effects of feedback, instruction, and initial performance level upon training and persistence of verbal rehearsal (<i>Journal of General Psychology</i>)	Effect Size: 0.629 LCI: 0.191 UCI: 1.067 Weight: 0.703 Standard error: 0.224	

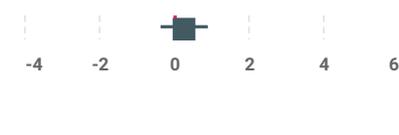
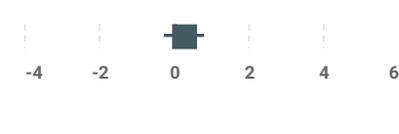
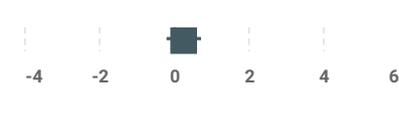
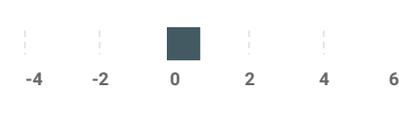
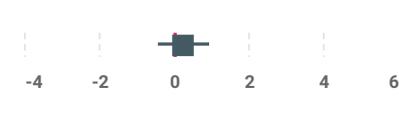
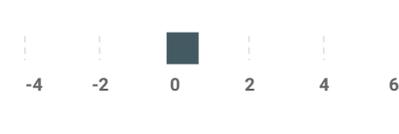
Author	Title	Effect Size	Effect Size (Graph)
Philippakos (2012)	Effects of reviewing on fourth- and fifth-grade students' persuasive writing and revising (NA)	Effect Size: 0.626 LCI: 0.207 UCI: 1.045 Weight: 0.715 Standard error: 0.214	
Van Evera (2003)	Achievement and motivation in the middle school science classroom: The effects of formative assessment feedback (NA)	Effect Size: 0.6 LCI: -0.184 UCI: 1.384 Weight: 0.492 Standard error: 0.4	
Fitch (2008)	Achieving Inclusion through CLAD: Collaborative Learning Assessment through Dialogue (International Journal of Inclusive Education)	Effect Size: 0.6 LCI: 0.188 UCI: 1.012 Weight: 0.719 Standard error: 0.21	
Feng (1983) 1_3	The Effect of Three Different Kinds of Feedback: Hint, Correct Answer, and Right/Wrong. Working Paper No. 11 (NA)	Effect Size: 0.587 LCI: -0.292 UCI: 1.466 Weight: 0.442 Standard error: 0.448	
Tenenbaum (1982) FB 1_2	A method of group instruction which is as effective as one-to-one tutorial instruction. (ProQuest Dissertations and Theses)	Effect Size: 0.55 LCI: 0.025 UCI: 1.075 Weight: 0.648 Standard error: 0.268	
Wyne (1979)	Time-on-task and reading performance in underachieving children (Journal of Reading Behavior)	Effect Size: 0.549 LCI: 0.159 UCI: 0.94 Weight: 0.733 Standard error: 0.199	
Gregory (1976) FB 1_2	Effects of Locus of Control and Type of Reinforcement on Programmed Instruction Performance of Adolescent Boys 1 (The Journal of Educational Research)	Effect Size: 0.53 LCI: -0.018 UCI: 1.078 Weight: 0.633 Standard error: 0.28	
Block (1970)	The effects of various levels of performance on selected cognitive, affective, and time variables (NA)	Effect Size: 0.519 LCI: 0.033 UCI: 1.005 Weight: 0.673 Standard error: 0.248	
Denton (2010)	Effectiveness of a Supplemental Early Reading Intervention Scaled Up in Multiple Schools (Exceptional Children)	Effect Size: 0.514 LCI: 0.318 UCI: 0.71 Weight: 0.833 Standard error: 0.1	

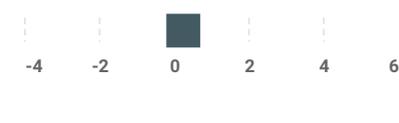
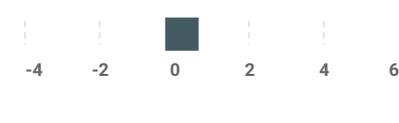
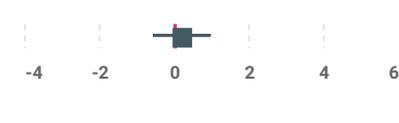
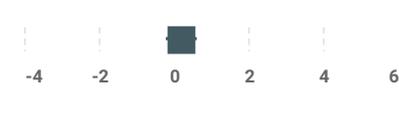
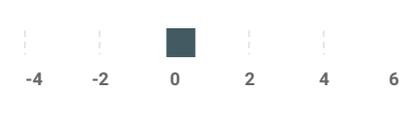
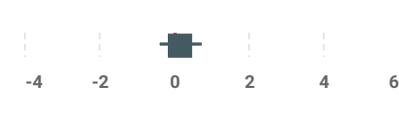
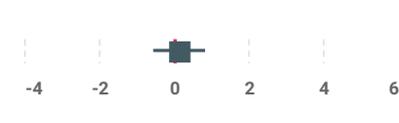
Author	Title	Effect Size	Effect Size (Graph)
Brookhart (2008)	Teacher inquiry into formative assessment practices in remedial reading classrooms (<i>Assessment in Education: Principles, Policy & Practice</i>)	Effect Size: 0.51 LCI: 0.198 UCI: 0.822 Weight: 0.778 Standard error: 0.159	
Armour-Thomas (1987)	The motivational effects of types of computer feedback on children's learning concepts and retention of relational concepts. (<i>Annual Meeting of the American Educational Research Association.</i>)	Effect Size: 0.507 LCI: 0.026 UCI: 0.987 Weight: 0.676 Standard error: 0.245	
Tobias (1984)	Macroprocesses, individual differences, and instructional methods (<i>The Annual Meeting of the American Educational Research Association</i>)	Effect Size: 0.484 LCI: -0.053 UCI: 1.021 Weight: 0.64 Standard error: 0.274	
Butler (1987) 1_3	Task-involving and ego-involving properties of evaluation: Effects of different feedback conditions on motivational perceptions, interest, and performance (<i>Journal of Educational Psychology</i>)	Effect Size: 0.482 LCI: -0.081 UCI: 1.045 Weight: 0.624 Standard error: 0.287	
Swanson (1977)	A comparison of mastery learning feedback systems, affecting achievement in chemistry (<i>The Annual Meeting of the American Educational Research Association</i>)	Effect Size: 0.473 LCI: -0.2 UCI: 1.147 Weight: 0.555 Standard error: 0.344	
Dubrulle (1984)	The study of precision teaching as a remedial method (<i>NA</i>)	Effect Size: 0.447 LCI: 0.154 UCI: 0.741 Weight: 0.788 Standard error: 0.15	
Rust (1977)	How knowledge of results and goal setting function during academic tests (<i>Journal of Experimental Education</i>)	Effect Size: 0.445 LCI: -0.044 UCI: 0.934 Weight: 0.671 Standard error: 0.249	
Llorens (2016) 1_2	Formative feedback to transfer self-regulation of task-oriented reading strategies (<i>Journal of Computer Assisted Learning</i>)	Effect Size: 0.442 LCI: -0.011 UCI: 0.896 Weight: 0.693 Standard error: 0.231	
Caccamise (2007) 1_2	Guided practice in technology-based summary writing (<i>Reading Comprehension Strategies: Theory, interventions, and technologies</i>)	Effect Size: 0.424 LCI: 0.006 UCI: 0.842 Weight: 0.716 Standard error: 0.213	

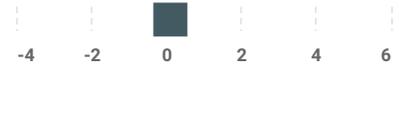
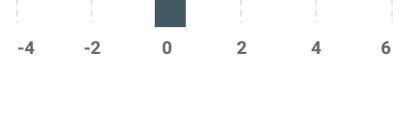
Author	Title	Effect Size	Effect Size (Graph)
Olson (1990) FB	The revising processes of the sixth-grade writers with and without peer feedback (<i>Journal of Educational Research</i>)	Effect Size: 0.419 LCI: -0.215 UCI: 1.054 Weight: 0.579 Standard error: 0.324	
Phielix (2011)	Group awareness of social and cognitive performance in a CSDL environment: Effects of a peer feedback and reflection tool (<i>Computers in Human Behavior</i>)	Effect Size: 0.413 LCI: -0.382 UCI: 1.208 Weight: 0.486 Standard error: 0.406	
Carlson (1979)	Toward a differential testing approach: Testing-the-limits employing the Raven matrices (<i>Intelligence</i>)	Effect Size: 0.406 LCI: 0.215 UCI: 0.596 Weight: 0.835 Standard error: 0.097	
Amendum (2011)	The Effectiveness Of A Technologically Facilitated Classroom-Based Early Reading Intervention: The Targeted Reading Intervention (<i>The Elementary School Journal</i>)	Effect Size: 0.396 LCI: 0.174 UCI: 0.617 Weight: 0.822 Standard error: 0.113	
Philippakos (2016)	The Effects of Giving Feedback on the Persuasive Writing of Fourth- and Fifth-Grade Students (<i>Reading Research Quarterly</i>)	Effect Size: 0.395 LCI: -0.027 UCI: 0.817 Weight: 0.713 Standard error: 0.215	
Rickards (1978)	Interspersed meaningful learning questions as semantic cues for poor comprehenders (<i>Reading Research Quarterly</i>)	Effect Size: 0.389 LCI: -0.124 UCI: 0.901 Weight: 0.656 Standard error: 0.262	
Rosenthal (2006)	Improving elementary-age children's writing fluency: A comparison of improvement based on performance feedback frequency (<i>NA</i>)	Effect Size: 0.387 LCI: -0.433 UCI: 1.207 Weight: 0.472 Standard error: 0.418	
Fiel (1975)	The Effects of Formative Evaluation and Remediation on Mastery of Intellectual Skills (<i>Journal of Educational Research</i>)	Effect Size: 0.384 LCI: -0.058 UCI: 0.825 Weight: 0.701 Standard error: 0.226	
Story (1986)	Factors that Influence Continuing Motivation (<i>Journal of Educational Research</i>)	Effect Size: 0.38 LCI: 0.188 UCI: 0.572 Weight: 0.835 Standard error: 0.098	

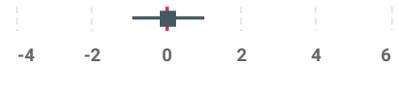
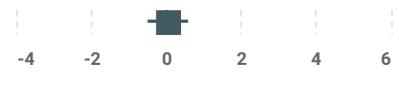
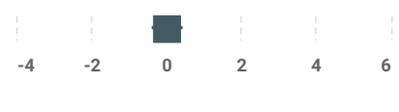
Author	Title	Effect Size	Effect Size (Graph)
Caccamise (2007) 1_1	Guided practice in technology-based summary writing (<i>Reading Comprehension Strategies: Theory, interventions, and technologies</i>)	Effect Size: 0.38 LCI: -0.038 UCI: 0.798 Weight: 0.716 Standard error: 0.213	
Hwang (2014)	Improving learning achievements, motivations and problem-solving skills through a peer assessment-based game development approach (<i>Educational Technology, Research and Development</i>)	Effect Size: 0.38 LCI: 0.074 UCI: 0.686 Weight: 0.781 Standard error: 0.156	
Lenhard (2013)	Rethinking strategy instruction: direct reading strategy instruction versus computer-based guided practice (<i>Journal of Research in Reading</i>)	Effect Size: 0.377 LCI: 0.037 UCI: 0.716 Weight: 0.763 Standard error: 0.173	
Elliot (1986)	An investigation of the effects of computer feedback and interspersed questions on the text comprehension of poor readers (<i>Dissertation Abstracts International</i>)	Effect Size: 0.376 LCI: -0.222 UCI: 0.974 Weight: 0.602 Standard error: 0.305	
Brandstetter (1978) 1_2	Charting scores in precision teaching for skill acquisition (<i>Exceptional Children</i>)	Effect Size: 0.37 LCI: -1.727 UCI: 2.467 Weight: 0.133 Standard error: 1.07	
Back (2005)	A Quasi-Experimental Research on the Educational Value of Performance Assessment (<i>Asia Pacific Education Review</i>)	Effect Size: 0.365 LCI: 0.049 UCI: 0.682 Weight: 0.775 Standard error: 0.162	
Llorens (2016) 1_4	Formative feedback to transfer self-regulation of task-oriented reading strategies (<i>Journal of Computer Assisted Learning</i>)	Effect Size: 0.359 LCI: -0.101 UCI: 0.818 Weight: 0.689 Standard error: 0.234	
Wijekumar (2013)	High-fidelity implementation of web-based intelligent tutoring system improves fourth and fifth graders content area reading comprehension (<i>Computers and Education</i>)	Effect Size: 0.354 LCI: 0.164 UCI: 0.543 Weight: 0.836 Standard error: 0.096	
Holman (2011)	Automated writing evaluation program's effects on student writing achievement (<i>NA</i>)	Effect Size: 0.343 LCI: -3.532 UCI: 4.219 Weight: 0.044 Standard error: 1.977	

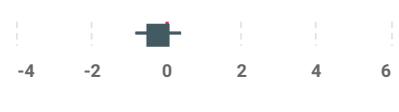
Author	Title	Effect Size	Effect Size (Graph)
Gregory (1976) FB 1_1	Effects of Locus of Control and Type of Reinforcement on Programmed Instruction Performance of Adolescent Boys 1 <i>(The Journal of Educational Research)</i>	Effect Size: 0.327 LCI: 0.174 UCI: 0.48 Weight: 0.848 Standard error: 0.078	
Mirkin (1979)	Formative evaluation in the classroom: An approach to improving instruction. Research Report No. 10 <i>(NA)</i>	Effect Size: 0.326 LCI: -0.448 UCI: 1.101 Weight: 0.497 Standard error: 0.395	
Clariana (2006)	The Effects of Different Forms of Feedback on Fuzzy and Verbatim Memory of Science Principles <i>(British Journal of Educational Psychology)</i>	Effect Size: 0.326 LCI: -0.118 UCI: 0.771 Weight: 0.699 Standard error: 0.227	
William (2004)	Teachers developing assessment for learning: Impact on student achievement <i>(Assessment in Education)</i>	Effect Size: 0.32 LCI: 0.16 UCI: 0.48 Weight: 0.846 Standard error: 0.082	
Franzke (2005)	Summary Street: Computer support for comprehension and writing <i>(Journal of Educational Computing Research)</i>	Effect Size: 0.308 LCI: -0.067 UCI: 0.683 Weight: 0.742 Standard error: 0.191	
Arter (1994)	The impact of training students to be self-assessors of writing <i>(The Annual Meeting of the American Educational Research Association)</i>	Effect Size: 0.3 LCI: -0.053 UCI: 0.653 Weight: 0.755 Standard error: 0.18	
Glover (1989)	Improving readers' estimates of learning from text: The role of inserted questions <i>(Reading Research and Instruction)</i>	Effect Size: 0.286 LCI: -0.434 UCI: 1.006 Weight: 0.528 Standard error: 0.367	
Boulet (1990) 1_2	Formative evaluation effects on learning music <i>(Journal of Educational Research)</i>	Effect Size: 0.251 LCI: -0.271 UCI: 0.774 Weight: 0.65 Standard error: 0.266	
Onyehalu (1983)	Feedback and performance of Piagetian conservation tasks in a developing country <i>(American Journal of Psychology)</i>	Effect Size: 0.25 LCI: -0.001 UCI: 0.5 Weight: 0.809 Standard error: 0.128	

Author	Title	Effect Size	Effect Size (Graph)
Reynolds (1988)	The effects of revision strategy instruction on the writing performance of students with learning disabilities (<i>Journal of Learning Disabilities</i>)	Effect Size: 0.243 LCI: -0.413 UCI: 0.899 Weight: 0.566 Standard error: 0.335	
Pridemore (1995) 1_2	Control of practice and level of feedback in computer-based instruction (<i>Contemporary Educational Psychology</i>)	Effect Size: 0.243 LCI: -0.09 UCI: 0.576 Weight: 0.766 Standard error: 0.17	
Gorard (2015)	Accelerated Reader: Evaluation report and executive summary (NA)	Effect Size: 0.24 LCI: 0.026 UCI: 0.453 Weight: 0.826 Standard error: 0.109	
Ehlinger (1988) FB	The relative merits of characteristics of teacher verbal modeling in influencing comprehension and comprehension monitoring of eighth-grade readers (NA)	Effect Size: 0.237 LCI: -0.325 UCI: 0.799 Weight: 0.624 Standard error: 0.287	
Benson (1979) 1_2	The effects of peer feedback during the writing process on writing performance, revision behavior and attitude toward writing (NA)	Effect Size: 0.231 LCI: -0.254 UCI: 0.716 Weight: 0.673 Standard error: 0.247	
Hanna (1976)	Effects of total and partial feedback in multiple-choice testing upon learning (<i>Journal of Educational Research</i>)	Effect Size: 0.228 LCI: 0.087 UCI: 0.369 Weight: 0.852 Standard error: 0.072	
Peeck (1979)	Learning from feedback: Comparison of two feedback procedures in a classroom setting (<i>Perceptual and Motor Skills</i>)	Effect Size: 0.225 LCI: -0.482 UCI: 0.932 Weight: 0.535 Standard error: 0.361	
Benson (1979) 1_1	The effects of peer feedback during the writing process on writing performance, revision behavior and attitude toward writing (NA)	Effect Size: 0.22 LCI: -0.015 UCI: 0.455 Weight: 0.816 Standard error: 0.12	
Bridgeman (1974) 1_1	Effects of test score feedback on immediately subsequent test performance (<i>Journal of Educational Psychology</i>)	Effect Size: 0.206 LCI: -0.109 UCI: 0.521 Weight: 0.776 Standard error: 0.161	

Author	Title	Effect Size	Effect Size (Graph)
Hillocks (1982)	The Interaction of Instruction, Teacher Comment, and Revision in Teaching the Composing Process (<i>Research in the Teaching of English</i>)	Effect Size: 0.202 LCI: -0.29 UCI: 0.693 Weight: 0.669 Standard error: 0.251	
Wijekumar (2014)	Multisite Randomized Controlled Trial Examining Intelligent Tutoring of Structure Strategy for Fifth-Grade Readers (<i>Journal of Research on Educational Effectiveness</i>)	Effect Size: 0.2 LCI: 0.126 UCI: 0.274 Weight: 0.867 Standard error: 0.038	
Koedinger (2010)	A quasi-experimental evaluation of an on-line formative assessment and tutoring system (<i>Educational Computing Research</i>)	Effect Size: 0.195 LCI: 0.053 UCI: 0.338 Weight: 0.852 Standard error: 0.073	
Wijekumar (2017)	Web-based text structure strategy instruction improves seventh graders' content area reading comprehension (<i>Journal of Educational Psychology</i>)	Effect Size: 0.18 LCI: -0.619 UCI: 0.979 Weight: 0.484 Standard error: 0.408	
Adler (1998)	The effects of instruction in six trait writing on third grade students' writing abilities and attitudes towards writing (<i>NA</i>)	Effect Size: 0.165 LCI: -0.272 UCI: 0.602 Weight: 0.704 Standard error: 0.223	
Tobias (1976)	Achievement-Treatment Interactions in Programmed Instruction (<i>Journal of Educational Psychology</i>)	Effect Size: 0.156 LCI: -0.23 UCI: 0.543 Weight: 0.735 Standard error: 0.197	
Prater (1993)	Using peer response groups with limited English proficient writers (<i>Bilingual Research Journal</i>)	Effect Size: 0.149 LCI: -0.438 UCI: 0.737 Weight: 0.608 Standard error: 0.3	
Coe (2011)	An investigation of the impact of the 6 + 1 Trait Writing model on grade 5 student writing achievement (NCEE 2012-4010) (<i>NA</i>)	Effect Size: 0.11 LCI: 0.024 UCI: 0.196 Weight: 0.865 Standard error: 0.044	
Neenan (1986) 1_2	Response cost, reinforcement, and children's Perteus Maze qualitative performance (<i>Journal of Abnormal Child</i>)	Effect Size: 0.108 LCI: -0.609 UCI: 0.824 Weight: 0.53 Standard error: 0.366	

Author	Title	Effect Size	Effect Size (Graph)
Speckesser (2018)	Embedding Formative Assessment: Evaluation report and executive summary (NA)	Effect Size: 0.1 LCI: -0.018 UCI: 0.218 Weight: 0.858 Standard error: 0.06	
Sarkis (2004)	Cognitive Tutor Algebra 1 program evaluation: Miami-Dade County Public Schools (NA)	Effect Size: 0.099 LCI: 0.04 UCI: 0.158 Weight: 0.87 Standard error: 0.03	
Mostow (2013)	Computer-Guided Oral Reading versus Independent Practice: Comparison of Sustained Silent Reading to an Automated Reading Tutor That Listens (<i>Journal of Educational Computing Research</i>)	Effect Size: 0.099 LCI: -0.195 UCI: 0.393 Weight: 0.787 Standard error: 0.15	
Butler (1987) 1_2	Task-involving and ego-involving properties of evaluation: Effects of different feedback conditions on motivational perceptions, interest, and performance (<i>Journal of Educational Psychology</i>)	Effect Size: 0.081 LCI: -0.316 UCI: 0.478 Weight: 0.728 Standard error: 0.203	
Tuominen (2008)	Formative assessment and collaborative learning with support involving middle school mathematics teachers (NA)	Effect Size: 0.08 LCI: -0.079 UCI: 0.239 Weight: 0.846 Standard error: 0.081	
Wiggins (2017)	Learner Response System: Evaluation report and executive summary (NA)	Effect Size: 0.072 LCI: -0.002 UCI: 0.145 Weight: 0.867 Standard error: 0.038	
Fuchs (1986)	Effects of Mastery Learning Procedures on Student Achievement (<i>Journal of Educational Research</i>)	Effect Size: 0.059 LCI: -0.362 UCI: 0.479 Weight: 0.714 Standard error: 0.215	
Paquette (2009) 1_1	Integrating the 6 + 1 writing traits model with cross-age tutoring: An investigation of elementary students' writing development (<i>Literacy Research and Instruction</i>)	Effect Size: 0.049 LCI: -0.621 UCI: 0.718 Weight: 0.558 Standard error: 0.342	
Baadte (2014)	Feedback Effects on Performance, Motivation and Mood: Are They Moderated by the Learner's Self-Concept? (<i>Scandinavian Journal of Educational Research</i>)	Effect Size: 0.033 LCI: -0.429 UCI: 0.495 Weight: 0.688 Standard error: 0.236	

Author	Title	Effect Size	Effect Size (Graph)
Llorens (2016) 1_1	Formative feedback to transfer self-regulation of task-oriented reading strategies (<i>Journal of Computer Assisted Learning</i>)	Effect Size: 0.033 LCI: -0.357 UCI: 0.423 Weight: 0.733 Standard error: 0.199	
Kozlow (2004)	Experimental study on the impact of the 6 + 1 Trait Writing model on student achievement in writing (<i>NA</i>)	Effect Size: 0.03 LCI: -0.958 UCI: 1.019 Weight: 0.391 Standard error: 0.504	
Schaffer (1986)	The Effects of Progressive Interactivity on Learning from Interactive Video (<i>Educational Communication and Technology</i>)	Effect Size: 0.02 LCI: -0.545 UCI: 0.586 Weight: 0.622 Standard error: 0.289	
Meyer (2010)	Improving literacy and metacognition with electronic portfolios: Teaching and learning with ePearl (<i>Computers & Education</i>)	Effect Size: 0.018 LCI: -0.214 UCI: 0.249 Weight: 0.818 Standard error: 0.118	
Oner (1977)	Impact of teacher behavior and teaching technique on learning by anxious children (<i>Stress and Anxiety</i>)	Effect Size: 0 LCI: -0.438 UCI: 0.438 Weight: 0.703 Standard error: 0.224	
Aumiller (1963)	The effects of knowledge of results on learning to spell new words by third and fifth grade pupils (<i>NA</i>)	Effect Size: -0.006 LCI: -0.29 UCI: 0.279 Weight: 0.792 Standard error: 0.145	
Rienzo (2016)	Powerful Learning Conversations: Evaluation report and executive summary (<i>NA</i>)	Effect Size: -0.021 LCI: -0.117 UCI: 0.075 Weight: 0.863 Standard error: 0.049	
Boulet (1990) 1_1	Formative evaluation effects on learning music (<i>Journal of Educational Research</i>)	Effect Size: -0.033 LCI: -0.589 UCI: 0.523 Weight: 0.628 Standard error: 0.284	
Siddiqui (2014)	Anglican Schools Partnership: Effective Feedback - Evaluation report and executive summary (<i>NA</i>)	Effect Size: -0.036 LCI: -0.111 UCI: 0.039 Weight: 0.867 Standard error: 0.038	

Author	Title	Effect Size	Effect Size (Graph)
Bridgeman (1974) 1_2	Effects of test score feedback on immediately subsequent test performance <i>(Journal of Educational Psychology)</i>	Effect Size: -0.098 LCI: -0.412 UCI: 0.216 Weight: 0.777 Standard error: 0.16	
Golke (2009)	The effects of accuracy feedback during a text comprehension test <i>(Educational and Child Psychology)</i>	Effect Size: -0.119 LCI: -0.398 UCI: 0.16 Weight: 0.795 Standard error: 0.142	
Peverly (2001)	The Effects of Adjunct Questions and Feedback on Improving the Reading Comprehension Skills of Learning-Disabled Adolescents <i>(Contemporary Educational Psychology)</i>	Effect Size: -0.19 LCI: -0.951 UCI: 0.571 Weight: 0.504 Standard error: 0.388	
Jacobs (1966)	A test of some assumptions underlying programmed instruction <i>(Psychological Reports)</i>	Effect Size: -0.209 LCI: -0.674 UCI: 0.255 Weight: 0.686 Standard error: 0.237	
Bumgarner (1984)	Effects of informational feedback and social reinforcement on elementary students' achievement during CAI drill and practice on multiplication facts <i>(Dissertation Abstracts International)</i>	Effect Size: -0.22 LCI: -0.771 UCI: 0.33 Weight: 0.632 Standard error: 0.281	
King (2003)	The effects of formative assessment on student self-regulation, motivational beliefs and achievement in elementary science <i>(NA)</i>	Effect Size: -0.236 LCI: -0.752 UCI: 0.279 Weight: 0.654 Standard error: 0.263	
King (1983)	The effects of training teachers in the use of formative evaluation in reading: An experimental-control comparison. Research Report No. 111 <i>(NA)</i>	Effect Size: -0.24 LCI: -0.878 UCI: 0.398 Weight: 0.577 Standard error: 0.326	
Moore (1961) 1_1	Knowledge of results in self-teaching spelling <i>(Psychological Reports)</i>	Effect Size: -0.27 LCI: -0.771 UCI: 0.231 Weight: 0.663 Standard error: 0.256	
Moore (1961) 1_2	Knowledge of results in self-teaching spelling <i>(Psychological Reports)</i>	Effect Size: -0.272 LCI: -1.016 UCI: 0.472 Weight: 0.514 Standard error: 0.38	

Author	Title	Effect Size	Effect Size (Graph)
Wentling (1973)	Mastery vs. non-mastery instruction with varying test item feedback treatment <i>(Journal of Educational Psychology)</i>	Effect Size: -0.313 LCI: -0.754 UCI: 0.128 Weight: 0.701 Standard error: 0.225	
Yin (2005)	The influence of formative assessments on student motivation, achievement, and conceptual change <i>(NA)</i>	Effect Size: -0.323 LCI: -0.571 UCI: -0.076 Weight: 0.811 Standard error: 0.126	
Neenan (1986) 1_1	Response cost, reinforcement, and children's Perteus Maze qualitative performance <i>(Journal of Abnormal Child)</i>	Effect Size: -0.481 LCI: -1.208 UCI: 0.247 Weight: 0.523 Standard error: 0.371	
Pridemore (1995) 1_1	Control of practice and level of feedback in computer-based instruction <i>(Contemporary Educational Psychology)</i>	Effect Size: -0.521 LCI: -0.858 UCI: -0.183 Weight: 0.764 Standard error: 0.172	
Khine (1996) FB 1_2	The Interaction of Cognitive Styles with Varying Levels of Feedback in Multimedia Presentation <i>(International Journal of Instructional Media)</i>	Effect Size: -1.569 LCI: -2.105 UCI: -1.034 Weight: 0.641 Standard error: 0.273	