

## Individualised instruction

Moderate impact for very low cost based on limited evidence

Individualised instruction involves providing different tasks for each learner and support at the individual level.

### Implementation cost



### Evidence strength



### Impact (months)



### Subject breakdown

maths: 106  
reading: 29  
science: 72  
toolkit: 198

### School phase breakdown

primary: 67  
secondary: 131  
toolkit: 198

## 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.

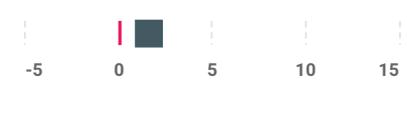
Standardised mean differences and confidence intervals for the most appropriate estimates of the impact of the intervention or approach for the Toolkit were extracted from each included study, along with other study variables. These effect sizes were further synthesised into a single pooled effect using 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](https://educationendowmentfoundation.org.uk/public/files/Toolkit/EEF_Evidence_Database_Protocol_and_Analysis_Plan_June2019.pdf)).

## References (198)

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.

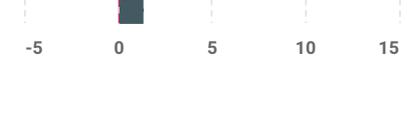
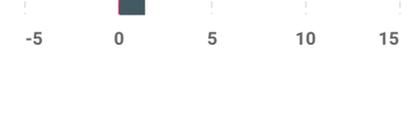
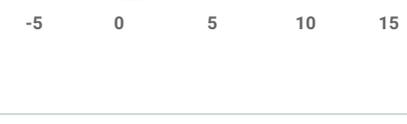
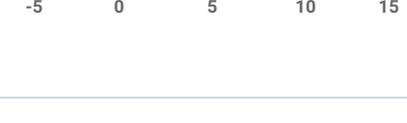
Studies that show an effect size result on the right-hand side of the red vertical red indicate that the particular intervention studied was more effective than standard practice. Studies that show an effect size on the left-hand side of the red vertical indicate that the particular intervention studied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

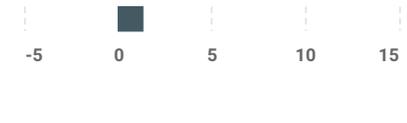
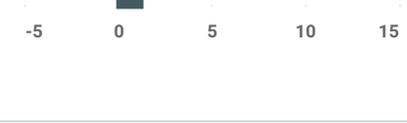
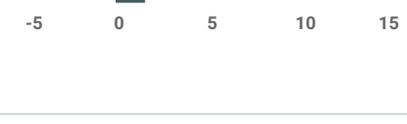
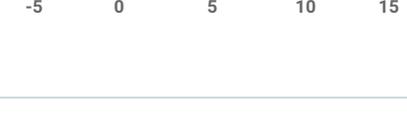
Author	Title	Effect Size	Effect Size (Graph)
Cassel (1962) 1_2	A Preliminary Evaluation of Programmed Instruction with Students of High Ability <i>(Psychological Reports)</i>	<b>Effect Size:</b> 8.445 <b>LCI:</b> 6.13 <b>UCI:</b> 10.761 <b>Weight:</b> 0.099 <b>Standard error:</b> 1.182	
Cassel (1962) 1_1	A Preliminary Evaluation of Programmed Instruction with Students of High Ability <i>(Psychological Reports)</i>	<b>Effect Size:</b> 4.784 <b>LCI:</b> 3.353 <b>UCI:</b> 6.215 <b>Weight:</b> 0.204 <b>Standard error:</b> 0.73	
Cassel (1962) 1_2	A preliminary evaluation of an automatic tutoring machine <i>(Journal of Secondary Education)</i>	<b>Effect Size:</b> 4.589 <b>LCI:</b> 2.776 <b>UCI:</b> 6.403 <b>Weight:</b> 0.146 <b>Standard error:</b> 0.925	
Armenia (1967) 1_2	Effectiveness of Programmed Learning as Homework for Culturally Deprived High School Students <i>(Psychological Reports)</i>	<b>Effect Size:</b> 3.08 <b>LCI:</b> 2.276 <b>UCI:</b> 3.884 <b>Weight:</b> 0.372 <b>Standard error:</b> 0.41	
Cassel (1962) 1_1	A preliminary evaluation of an automatic tutoring machine <i>(Journal of Secondary Education)</i>	<b>Effect Size:</b> 2.924 <b>LCI:</b> 1.586 <b>UCI:</b> 4.262 <b>Weight:</b> 0.223 <b>Standard error:</b> 0.683	
Tenenbaum (1982) II 1_2	A method of group instruction which is as effective as one-to-one tutorial instruction. <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 1.979 <b>LCI:</b> 1.355 <b>UCI:</b> 2.604 <b>Weight:</b> 0.438 <b>Standard error:</b> 0.319	

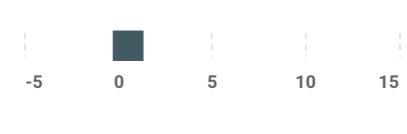
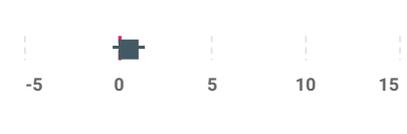
Author	Title	Effect Size	Effect Size (Graph)
Tenenbaum (1982) II 1_1	A method of group instruction which is as effective as one-to-one tutorial instruction. ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> 1.928 <b>LCI:</b> 1.308 <b>UCI:</b> 2.547 <b>Weight:</b> 0.44 <b>Standard error:</b> 0.316	
Harper (1973) 1_1	A comparison of three elementary mathematics programs: A model for curriculum evaluation. ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> 1.697 <b>LCI:</b> 0.787 <b>UCI:</b> 2.608 <b>Weight:</b> 0.336 <b>Standard error:</b> 0.465	
LaPlaca (1974)	A Cost-Effectiveness Analysis of Individual Learning Units in a Junior High School Basic Mathematics Program ( <i>Dissertation Abstracts International, 1973, 34, 3771A. (University Microfilms No. 73-32,098)</i> )	<b>Effect Size:</b> 1.578 <b>LCI:</b> 1.083 <b>UCI:</b> 2.072 <b>Weight:</b> 0.487 <b>Standard error:</b> 0.252	
Jacobs (1961) 1_2	The influence of teaching machine procedures upon learning in high school chemistry. ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> 1.371 <b>LCI:</b> 0.708 <b>UCI:</b> 2.034 <b>Weight:</b> 0.424 <b>Standard error:</b> 0.338	
Lindsay (1974)	A study of the effects of three methods of teaching high school chemistry upon achievement in chemistry, critical thinking abilities, and scientific interest. ( <i>NA</i> )	<b>Effect Size:</b> 1.333 <b>LCI:</b> 0.718 <b>UCI:</b> 1.947 <b>Weight:</b> 0.442 <b>Standard error:</b> 0.313	
Aven (1970)	A Study in the Use of Programmed Geography Unit ( <i>California Journal of Educational Research</i> )	<b>Effect Size:</b> 1.31 <b>LCI:</b> 0.971 <b>UCI:</b> 1.649 <b>Weight:</b> 0.541 <b>Standard error:</b> 0.173	
Tack (1972)	The Effectiveness of the Westinghouse Learning Center Program Involving a Performance Contract on Reading and Mathematics Achievement of Educationally Deprived Children ( <i>Ann Arbor, Michigan University Microfilms, 1972. No. 72-5766.</i> )	<b>Effect Size:</b> 1.24 <b>LCI:</b> 0.599 <b>UCI:</b> 1.881 <b>Weight:</b> 0.432 <b>Standard error:</b> 0.327	
Graff (2008)	Evaluating a web based intelligent tutoring system for mathematics at German lower secondary schools ( <i>Education and Information Technologies</i> )	<b>Effect Size:</b> 1.162 <b>LCI:</b> 0.835 <b>UCI:</b> 1.489 <b>Weight:</b> 0.545 <b>Standard error:</b> 0.167	
Fulton (1970)	An analysis of student outcomes utilizing two approaches to teaching BSCS biology. ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> 1.128 <b>LCI:</b> 0.456 <b>UCI:</b> 1.8 <b>Weight:</b> 0.42 <b>Standard error:</b> 0.343	

Author	Title	Effect Size	Effect Size (Graph)
Nanney (1973)	The effects of individualized and traditional mathematics instruction programs on achievement and self concept scores <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 1.12 <b>LCI:</b> 0.878 <b>UCI:</b> 1.362 <b>Weight:</b> 0.569 <b>Standard error:</b> 0.124	
Sinks (1968)	How individualized instruction in junior high school science, mathematics, language arts, and social studies affects student achievement <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 1.074 <b>LCI:</b> 0.672 <b>UCI:</b> 1.476 <b>Weight:</b> 0.521 <b>Standard error:</b> 0.205	
Fisher (1968) 1_1	An Investigation of Three Approaches to the Teaching of Mathematics in the Elementary School <i>(NA)</i>	<b>Effect Size:</b> 1.042 <b>LCI:</b> 0.593 <b>UCI:</b> 1.491 <b>Weight:</b> 0.504 <b>Standard error:</b> 0.229	
Fuchs (1992)	Effects of Expert System Consultation Within Curriculum-Based Measurement, Using a Reading Maze Task <i>(Exceptional Children)</i>	<b>Effect Size:</b> 1.038 <b>LCI:</b> 0.389 <b>UCI:</b> 1.687 <b>Weight:</b> 0.429 <b>Standard error:</b> 0.331	
Tarim (2008)	The effects of cooperative learning on Turkish elementary students' mathematics achievement and attitude towards mathematics using TAI and STAD methods <i>(Educational Studies in Mathematics)</i>	<b>Effect Size:</b> 1.003 <b>LCI:</b> 0.686 <b>UCI:</b> 1.32 <b>Weight:</b> 0.548 <b>Standard error:</b> 0.162	
Gijlers (2013)	Using Concept Maps to Facilitate Collaborative Simulation-Based Inquiry Learning <i>(The Journal of the Learning Sciences)</i>	<b>Effect Size:</b> 0.901 <b>LCI:</b> 0.278 <b>UCI:</b> 1.524 <b>Weight:</b> 0.439 <b>Standard error:</b> 0.318	
Dick (1970)	Comparative effects of ability and presentation mode in computer-assisted instruction and programed instruction <i>(Educational Communication and Technology Journal)</i>	<b>Effect Size:</b> 0.89 <b>LCI:</b> 0.376 <b>UCI:</b> 1.404 <b>Weight:</b> 0.48 <b>Standard error:</b> 0.262	
Spencer (1989)	Case Study: The Relative Effectiveness of Programmed Instruction in the Teaching of Chemical Concepts: A Case Study of Schools in Ibadan <i>(Educational and Training Technology International)</i>	<b>Effect Size:</b> 0.84 <b>LCI:</b> 0.581 <b>UCI:</b> 1.098 <b>Weight:</b> 0.564 <b>Standard error:</b> 0.132	
Ardac (2004)	Effectiveness of Multimedia-Based Instruction that Emphasizes Molecular Representations on Students' Understanding of Chemical Change <i>(Journal of Research in Science Teaching)</i>	<b>Effect Size:</b> 0.833 <b>LCI:</b> 0.213 <b>UCI:</b> 1.452 <b>Weight:</b> 0.44 <b>Standard error:</b> 0.316	

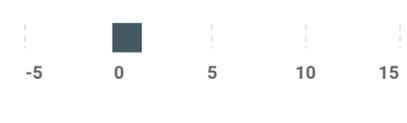
Author	Title	Effect Size	Effect Size (Graph)
Thornton (1970)	The comparative effectiveness of programmed instruction, educational television, and traditional teaching of a unit on human biology in selected elementary schools <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.822 <b>LCI:</b> 0.477 <b>UCI:</b> 1.166 <b>Weight:</b> 0.539 <b>Standard error:</b> 0.176	
Charles (1970)	An investigation of the use of cloze tests to compare gain scores of students in science who have used individualised science materials and those who have used traditional textbook materials. <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.8 <b>LCI:</b> 0.467 <b>UCI:</b> 1.133 <b>Weight:</b> 0.543 <b>Standard error:</b> 0.17	
Arbuckle (2005)	Conceptual understanding in a computer-assisted Algebra 1 classroom <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.777 <b>LCI:</b> 0.337 <b>UCI:</b> 1.218 <b>Weight:</b> 0.507 <b>Standard error:</b> 0.225	
Gegner (2009)	Computer-Supported Aids to Making Sense of Scientific Articles: Cognitive, Motivational, and Attitudinal Effects <i>(Educational Technology Research and Development)</i>	<b>Effect Size:</b> 0.769 <b>LCI:</b> 0.386 <b>UCI:</b> 1.151 <b>Weight:</b> 0.527 <b>Standard error:</b> 0.195	
Leinhardt (1981) II	An Iterative Evaluation of NRS: Ripples in a Pond <i>(Evaluation Review)</i>	<b>Effect Size:</b> 0.76 <b>LCI:</b> 0.45 <b>UCI:</b> 1.07 <b>Weight:</b> 0.55 <b>Standard error:</b> 0.158	
Jerman (1973) II 1_2	Individualized Instruction in Problem Solving in Elementary School Mathematics <i>(Journal for Research in Mathematics Education)</i>	<b>Effect Size:</b> 0.746 <b>LCI:</b> 0.411 <b>UCI:</b> 1.08 <b>Weight:</b> 0.543 <b>Standard error:</b> 0.171	
Hwang (2008)	Diagnosing student learning problems based on historical assessment records <i>(Innovations in Education and Teaching International)</i>	<b>Effect Size:</b> 0.746 <b>LCI:</b> 0.28 <b>UCI:</b> 1.211 <b>Weight:</b> 0.498 <b>Standard error:</b> 0.238	
Reed (1974)	The effect of individualized instruction in science upon the achievement, attitude, and self-concept of inner-city secondary students. <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.741 <b>LCI:</b> 0.507 <b>UCI:</b> 0.975 <b>Weight:</b> 0.571 <b>Standard error:</b> 0.119	
Kulm (1977)	The Effects of Two Summative Evaluation Methods on Achievement and Attitudes in Individualized Seventh-Grade Mathematics <i>(School Science and Mathematics)</i>	<b>Effect Size:</b> 0.735 <b>LCI:</b> 0.404 <b>UCI:</b> 1.066 <b>Weight:</b> 0.544 <b>Standard error:</b> 0.169	

Author	Title	Effect Size	Effect Size (Graph)
Roebuck (1970)	A definite conclusion in a comparison between conventional and programmed instruction. <i>(Programmed Learning and Educational Technology)</i>	<b>Effect Size:</b> 0.73 <b>LCI:</b> 0.168 <b>UCI:</b> 1.292 <b>Weight:</b> 0.462 <b>Standard error:</b> 0.287	
O'Toole (1966)	A Study to Determine Whether Fifth Grade Children Can Learn Certain Selected Problem Solving Abilities through Individualized Instruction <i>(NA)</i>	<b>Effect Size:</b> 0.717 <b>LCI:</b> 0.166 <b>UCI:</b> 1.269 <b>Weight:</b> 0.466 <b>Standard error:</b> 0.281	
Blank (1963)	Inquiry training through programmed instruction <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.683 <b>LCI:</b> 0 <b>UCI:</b> 1.367 <b>Weight:</b> 0.416 <b>Standard error:</b> 0.349	
Zeschke (1966)	Using Programmed Instruction in a High School Biology Course <i>(The American Biology Teacher)</i>	<b>Effect Size:</b> 0.678 <b>LCI:</b> 0.066 <b>UCI:</b> 1.29 <b>Weight:</b> 0.443 <b>Standard error:</b> 0.312	
Darnowski (1968)	Three types of programmed learning and the conventional teaching of the nuclear chemistry portion of a high school chemistry course. <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.677 <b>LCI:</b> 0.376 <b>UCI:</b> 0.979 <b>Weight:</b> 0.553 <b>Standard error:</b> 0.154	
Korganci (2014)	Comparison of Generating Concept Maps and Using Concept Maps on Student Achievement <i>(NA)</i>	<b>Effect Size:</b> 0.675 <b>LCI:</b> -0.042 <b>UCI:</b> 1.391 <b>Weight:</b> 0.404 <b>Standard error:</b> 0.366	
Slavin (1985) II	Effects of Whole Class, Ability Grouped, and Individualized Instruction on Mathematics Achievement <i>(American Educational Research Journal)</i>	<b>Effect Size:</b> 0.669 <b>LCI:</b> 0.396 <b>UCI:</b> 0.942 <b>Weight:</b> 0.561 <b>Standard error:</b> 0.139	
Siddiqi (1973)	An analysis of the effectiveness of the use of auto-instructional materials in the teaching of PSSC physics by qualified physics teachers <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.654 <b>LCI:</b> 0.338 <b>UCI:</b> 0.969 <b>Weight:</b> 0.548 <b>Standard error:</b> 0.161	
Stankov (2008)	TEx-Sys model for building intelligent tutoring systems <i>(Computers and Education)</i>	<b>Effect Size:</b> 0.65 <b>LCI:</b> 0.434 <b>UCI:</b> 0.866 <b>Weight:</b> 0.575 <b>Standard error:</b> 0.11	

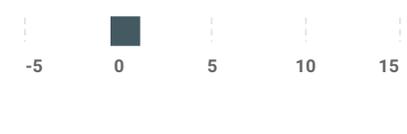
Author	Title	Effect Size	Effect Size (Graph)
Linn (1976) II	Personalization in science: Preliminary investigation at the middle school level ( <i>Instructional Science</i> )	<b>Effect Size:</b> 0.634 <b>LCI:</b> 0.238 <b>UCI:</b> 1.03 <b>Weight:</b> 0.522 <b>Standard error:</b> 0.202	
Jacobs (1961) 1_1	The influence of teaching machine procedures upon learning in high school chemistry. ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> 0.631 <b>LCI:</b> 0.024 <b>UCI:</b> 1.238 <b>Weight:</b> 0.445 <b>Standard error:</b> 0.31	
Mendicino (2009)	A comparison of traditional homework to computer-supported homework ( <i>Journal of Research on Technology in Education</i> )	<b>Effect Size:</b> 0.615 <b>LCI:</b> 0.078 <b>UCI:</b> 1.152 <b>Weight:</b> 0.471 <b>Standard error:</b> 0.274	
Linn (1974)	Personalization in Science: A Pilot Study ( <i>Paper presented at the Annual Meeting of the National Association for Research in Science Teaching (47th, Chicago, Illinois, April 1974)</i> )	<b>Effect Size:</b> 0.605 <b>LCI:</b> 0.209 <b>UCI:</b> 1 <b>Weight:</b> 0.523 <b>Standard error:</b> 0.202	
Kanive (2014)	Comparison of the Effects of Computer-Based Practice and Conceptual Understanding Interventions on Mathematics Fact Retention and Generalization ( <i>Journal of Educational Research</i> )	<b>Effect Size:</b> 0.59 <b>LCI:</b> 0.054 <b>UCI:</b> 1.126 <b>Weight:</b> 0.472 <b>Standard error:</b> 0.273	
Williams (1969)	An Experimental Investigation of Individualized Instruction in the Teaching of Quantitative Physical Science ( <i>NA</i> )	<b>Effect Size:</b> 0.579 <b>LCI:</b> 0.155 <b>UCI:</b> 1.003 <b>Weight:</b> 0.513 <b>Standard error:</b> 0.216	
Jones (1948)	An experiment in adaptation to individual differences. ( <i>Journal of Educational Psychology</i> )	<b>Effect Size:</b> 0.572 <b>LCI:</b> 0.319 <b>UCI:</b> 0.825 <b>Weight:</b> 0.566 <b>Standard error:</b> 0.129	
Beul (1973)	An evaluation study of teaching seventh grade mathematics incorporating team teaching, individualized instruction, and team supervision utilizing the strategy of learning for mastery ( <i>Dissertation Abstracts International, 1974, 34, 4685A. (University Microfilms No. 74-4479)</i> )	<b>Effect Size:</b> 0.568 <b>LCI:</b> 0.368 <b>UCI:</b> 0.768 <b>Weight:</b> 0.578 <b>Standard error:</b> 0.102	
Wheeler (1999)	Use of a cognitive tutoring system in the improvement of the abstract reasoning component of word problem solving ( <i>Computers in Human Behavior</i> )	<b>Effect Size:</b> 0.562 <b>LCI:</b> 0.319 <b>UCI:</b> 0.804 <b>Weight:</b> 0.569 <b>Standard error:</b> 0.124	

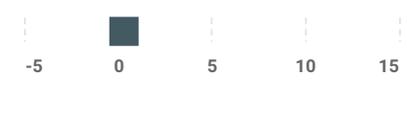
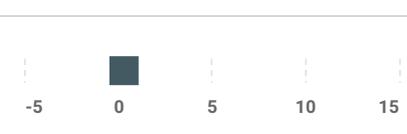
Author	Title	Effect Size	Effect Size (Graph)
Puntambekar (2003)	Improving Navigation and Learning in Hypertext Environments with Navigable Concept Maps <i>(Human-Computer Interaction)</i>	<b>Effect Size:</b> 0.56 <b>LCI:</b> -0.108 <b>UCI:</b> 1.227 <b>Weight:</b> 0.422 <b>Standard error:</b> 0.341	
Shavelson (1970)	Individualized Instruction: A Systems Approach <i>(The Journal of Educational Research)</i>	<b>Effect Size:</b> 0.554 <b>LCI:</b> -0.022 <b>UCI:</b> 1.131 <b>Weight:</b> 0.456 <b>Standard error:</b> 0.294	
McNamara (2006)	Improving Adolescent Students' Reading Comprehension with Istart <i>(Journal of Educational Computing Research)</i>	<b>Effect Size:</b> 0.538 <b>LCI:</b> -0.113 <b>UCI:</b> 1.189 <b>Weight:</b> 0.428 <b>Standard error:</b> 0.332	
Troost (1971)	Effects of method of instruction and frequency of response on criterion performance <i>(Science Education)</i>	<b>Effect Size:</b> 0.534 <b>LCI:</b> 0.22 <b>UCI:</b> 0.847 <b>Weight:</b> 0.549 <b>Standard error:</b> 0.16	
Boblick (1972)	Writing chemical formulas: A comparison of computer assisted instruction with traditional teaching techniques <i>(Science Education)</i>	<b>Effect Size:</b> 0.531 <b>LCI:</b> -0.003 <b>UCI:</b> 1.065 <b>Weight:</b> 0.473 <b>Standard error:</b> 0.272	
Bull (1971)	A comparison of the achievement of geometry students taught by individualized instruction and traditional instruction <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.519 <b>LCI:</b> 0.177 <b>UCI:</b> 0.861 <b>Weight:</b> 0.54 <b>Standard error:</b> 0.174	
Chu (2014)	Implementation of a model-tracing-based learning diagnosis system to promote elementary students' learning in mathematics <i>(Educational Technology and Society)</i>	<b>Effect Size:</b> 0.518 <b>LCI:</b> 0.16 <b>UCI:</b> 0.876 <b>Weight:</b> 0.535 <b>Standard error:</b> 0.183	
Beal (2010) 1_1	Evaluation of AnimalWatch: An intelligent tutoring system for arithmetic and fractions. <i>(Journal of Interactive Online Learning)</i>	<b>Effect Size:</b> 0.515 <b>LCI:</b> -0.388 <b>UCI:</b> 1.418 <b>Weight:</b> 0.339 <b>Standard error:</b> 0.461	
Putbrese (1971)	An investigation into the effect of selected patterns of grouping upon arithmetic achievement <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.51 <b>LCI:</b> -0.005 <b>UCI:</b> 1.025 <b>Weight:</b> 0.48 <b>Standard error:</b> 0.263	

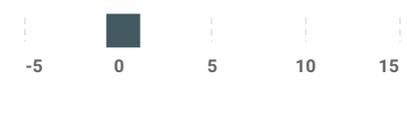
Author	Title	Effect Size	Effect Size (Graph)
Marquez (1976) II	The effect of individualized instruction on academic growth and attitudes toward school in low achieving sixth-grade students. ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> 0.509 <b>LCI:</b> 0.088 <b>UCI:</b> 0.93 <b>Weight:</b> 0.514 <b>Standard error:</b> 0.215	
Cowan (1967)	Autoinstructional materials in teaching physics in small high schools ( <i>Journal of Experimental Education</i> )	<b>Effect Size:</b> 0.508 <b>LCI:</b> -0.004 <b>UCI:</b> 1.02 <b>Weight:</b> 0.481 <b>Standard error:</b> 0.261	
Hug (1969)	An experiment comparing cognitive and affective dimensions of independent study, small-group instruction in high school biology. ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> 0.482 <b>LCI:</b> 0 <b>UCI:</b> 0.965 <b>Weight:</b> 0.492 <b>Standard error:</b> 0.246	
Denton (1975)	The Relation between Required Objective Attainment and Student Selected Objectives: Two Components in an Instructional Model for Individualization ( <i>Paper presented at the Annual Meeting of the American Educational Research Association (Washington, D.C., March 30-April 3, 1975). Occasional marginal legibility</i> )	<b>Effect Size:</b> 0.475 <b>LCI:</b> 0.273 <b>UCI:</b> 0.677 <b>Weight:</b> 0.578 <b>Standard error:</b> 0.103	
Whipple (1972)	A Statistical Comparison of the Effectiveness of Teaching Metric Geometry by the Laboratory and individualized Instructional Approaches. ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> 0.467 <b>LCI:</b> 0.055 <b>UCI:</b> 0.879 <b>Weight:</b> 0.517 <b>Standard error:</b> 0.21	
Bowen (1974)	An evaluative study of an individualized math team program ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> 0.459 <b>LCI:</b> -0.121 <b>UCI:</b> 1.039 <b>Weight:</b> 0.455 <b>Standard error:</b> 0.296	
Jerman (1973) II 1_1	Individualized Instruction in Problem Solving in Elementary School Mathematics ( <i>Journal for Research in Mathematics Education</i> )	<b>Effect Size:</b> 0.443 <b>LCI:</b> 0.111 <b>UCI:</b> 0.774 <b>Weight:</b> 0.544 <b>Standard error:</b> 0.169	
Lesta (2002)	An Intelligent Teaching Assistant System for Logic ( <i>Intelligent Tutoring Systems</i> )	<b>Effect Size:</b> 0.431 <b>LCI:</b> 0.291 <b>UCI:</b> 0.571 <b>Weight:</b> 0.589 <b>Standard error:</b> 0.071	
Heffernan (1973)	A comparison of the effects of individualized science instruction with traditional science instruction in junior high school. ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> 0.424 <b>LCI:</b> -0.125 <b>UCI:</b> 0.974 <b>Weight:</b> 0.467 <b>Standard error:</b> 0.28	

Author	Title	Effect Size	Effect Size (Graph)
Denton (2013)	Effects of Tier 3 Intervention for Students with Persistent Reading Difficulties and Characteristics of Inadequate Responders ( <i>Journal of Educational Psychology</i> )	<b>Effect Size:</b> 0.414 <b>LCI:</b> -0.076 <b>UCI:</b> 0.904 <b>Weight:</b> 0.489 <b>Standard error:</b> 0.25	
Johnson (1972)	A study of the effects of using three different sets of instructional materials to present a high school biology unit on genetics ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> 0.406 <b>LCI:</b> -0.037 <b>UCI:</b> 0.849 <b>Weight:</b> 0.506 <b>Standard error:</b> 0.226	
Osman (2014)	Impact of Interactive Multimedia Module with Pedagogical Agents on Students' Understanding and Motivation in the Learning of Electrochemistry ( <i>International Journal of Science and Mathematics Education</i> )	<b>Effect Size:</b> 0.403 <b>LCI:</b> 0.052 <b>UCI:</b> 0.755 <b>Weight:</b> 0.537 <b>Standard error:</b> 0.179	
Coyne (2013)	Adjusting Beginning Reading Intervention Based on Student Performance: An Experimental Evaluation ( <i>Exceptional Children</i> )	<b>Effect Size:</b> 0.402 <b>LCI:</b> -0.016 <b>UCI:</b> 0.82 <b>Weight:</b> 0.515 <b>Standard error:</b> 0.213	
Johnson (1972) 1_1	Minneapolis IPI Mathematics Project 1971-72: Third Year Evaluation. A Title I, ESEA Project. (NA)	<b>Effect Size:</b> 0.397 <b>LCI:</b> -0.041 <b>UCI:</b> 0.836 <b>Weight:</b> 0.508 <b>Standard error:</b> 0.224	
Jones (1988)	The Effectiveness of Data-Based Instruction by Student Teachers in Classrooms for Pupils with Mild Learning Handicaps ( <i>Teacher Education and Special Education</i> )	<b>Effect Size:</b> 0.395 <b>LCI:</b> -0.479 <b>UCI:</b> 1.269 <b>Weight:</b> 0.348 <b>Standard error:</b> 0.446	
Baley (1969)	A System for Individualized Math Instruction in Secondary Schools. (NA)	<b>Effect Size:</b> 0.38 <b>LCI:</b> -0.038 <b>UCI:</b> 0.797 <b>Weight:</b> 0.515 <b>Standard error:</b> 0.213	
Chien (2008)	The Effect of an Intelligent Tutoring System (ITS) on Student Achievement in Algebraic Expression ( <i>International Journal of Instruction</i> )	<b>Effect Size:</b> 0.37 <b>LCI:</b> -0.132 <b>UCI:</b> 0.872 <b>Weight:</b> 0.484 <b>Standard error:</b> 0.256	
Nordland (1975)	An Analysis of the Effectiveness of Audio-Tutorial Instruction: Measured by Student Achievement and Predicted by Standardized Measures ( <i>School Science and Mathematics</i> )	<b>Effect Size:</b> 0.343 <b>LCI:</b> -0.021 <b>UCI:</b> 0.706 <b>Weight:</b> 0.533 <b>Standard error:</b> 0.186	

Author	Title	Effect Size	Effect Size (Graph)
Peterson (1970)	Development and evaluation of an individualized learning unit in science for the junior high school <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.336 <b>LCI:</b> 0.237 <b>UCI:</b> 0.435 <b>Weight:</b> 0.595 <b>Standard error:</b> 0.051	
Taylor (1972)	Independent study versus presentation by lecture and discussion: A comparative study of attitude and achievement in two algebra I classes <i>(NA)</i>	<b>Effect Size:</b> 0.336 <b>LCI:</b> -0.232 <b>UCI:</b> 0.905 <b>Weight:</b> 0.46 <b>Standard error:</b> 0.29	
Fisher (1967) 1_2	The relative merits of selected aspects of individualized instruction in an elementary school mathematics program <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.334 <b>LCI:</b> -0.136 <b>UCI:</b> 0.804 <b>Weight:</b> 0.496 <b>Standard error:</b> 0.24	
Smith (1974) II	Effects of class size and individualized instruction on the writing of high school juniors <i>(NA)</i>	<b>Effect Size:</b> 0.329 <b>LCI:</b> 0.044 <b>UCI:</b> 0.615 <b>Weight:</b> 0.557 <b>Standard error:</b> 0.146	
Carlson (1975)	The design and evaluation of an individualized, contract-directed high school chemistry course <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.324 <b>LCI:</b> -0.097 <b>UCI:</b> 0.746 <b>Weight:</b> 0.514 <b>Standard error:</b> 0.215	
Koedinger (1997)	Intelligent tutoring goes to school in the big city. <i>(Intelligence in Education)</i>	<b>Effect Size:</b> 0.322 <b>LCI:</b> 0.073 <b>UCI:</b> 0.571 <b>Weight:</b> 0.567 <b>Standard error:</b> 0.127	
Wijekumar (2012)	Large-scale randomized controlled trial with 4th graders using intelligent tutoring of the structure strategy to improve nonfiction reading comprehension <i>(Educational Technology Research and Development)</i>	<b>Effect Size:</b> 0.322 <b>LCI:</b> 0.245 <b>UCI:</b> 0.399 <b>Weight:</b> 0.597 <b>Standard error:</b> 0.039	
Crawford (1970)	A Pilot Study of Computer-Assisted Drill and Practice in Seventh Grade Remedial Mathematics <i>(California Journal of Educational Research)</i>	<b>Effect Size:</b> 0.319 <b>LCI:</b> -0.409 <b>UCI:</b> 1.046 <b>Weight:</b> 0.4 <b>Standard error:</b> 0.371	
Nix (1969)	An experimental study of individualized instruction in general mathematics <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.304 <b>LCI:</b> -0.001 <b>UCI:</b> 0.609 <b>Weight:</b> 0.552 <b>Standard error:</b> 0.156	

Author	Title	Effect Size	Effect Size (Graph)
Wilton (1971)	A Comparison between Teaching Methods in Secondary School Biology ( <i>Journal of Biological Education</i> )	<b>Effect Size:</b> 0.304 <b>LCI:</b> 0.194 <b>UCI:</b> 0.415 <b>Weight:</b> 0.593 <b>Standard error:</b> 0.056	
Braly (1972)	Independent instruction in high school chemistry: A comparison with a traditional technique ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> 0.304 <b>LCI:</b> -0.105 <b>UCI:</b> 0.714 <b>Weight:</b> 0.518 <b>Standard error:</b> 0.209	
Radwan (1997)	Evaluation of the effectiveness of a computer-assisted intelligent tutoring system model developed to improve specific learning skills of special needs students ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> 0.291 <b>LCI:</b> -0.254 <b>UCI:</b> 0.836 <b>Weight:</b> 0.468 <b>Standard error:</b> 0.278	
Ritter (2007)	What Evidence Matters? A randomized field trial of Cognitive Tutor Algebra I. ( <i>Frontiers in artificial intelligence and applications, 162: Supporting learning flow through integrative technologies</i> )	<b>Effect Size:</b> 0.291 <b>LCI:</b> 0.039 <b>UCI:</b> 0.543 <b>Weight:</b> 0.566 <b>Standard error:</b> 0.128	
Morgan (2002)	An experimental study of the effects of Cognitive Tutor ® Algebra I on student knowledge and attitude ( <i>NA</i> )	<b>Effect Size:</b> 0.285 <b>LCI:</b> 0.098 <b>UCI:</b> 0.472 <b>Weight:</b> 0.581 <b>Standard error:</b> 0.095	
Gaskill (1971) 1_2	An evaluation of individually prescribed instruction in the Primary grades of the Urbana Schools. ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> 0.28 <b>LCI:</b> -0.256 <b>UCI:</b> 0.817 <b>Weight:</b> 0.472 <b>Standard error:</b> 0.274	
Slavin (1984) II	Team Assisted Individualization: Cooperative Learning and Individualized Instruction in the Mainstreamed Classroom ( <i>Remedial and Special Education</i> )	<b>Effect Size:</b> 0.28 <b>LCI:</b> -0.043 <b>UCI:</b> 0.603 <b>Weight:</b> 0.546 <b>Standard error:</b> 0.165	
Young (1967)	An Experiment in the Use of Programmed Materials in Teaching High School Biology ( <i>NA</i> )	<b>Effect Size:</b> 0.272 <b>LCI:</b> -0.056 <b>UCI:</b> 0.6 <b>Weight:</b> 0.545 <b>Standard error:</b> 0.167	
Przekop (1969)	An investigation of study guide integration with a filmloop in an auto-instructional program and its effects on student acquisition and retention of certain cognitive behaviors in biology. ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> 0.271 <b>LCI:</b> -0.238 <b>UCI:</b> 0.781 <b>Weight:</b> 0.482 <b>Standard error:</b> 0.26	

Author	Title	Effect Size	Effect Size (Graph)
Carnes (1966)	An experimental study in the use of programmed materials for seventh-grade open-ended laboratory experiences <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.27 <b>LCI:</b> 0.005 <b>UCI:</b> 0.536 <b>Weight:</b> 0.563 <b>Standard error:</b> 0.135	
Fisher (1973)	A comparative study of achievement in the concepts of fundamentals of geometry taught by computer managed individualized behavioral objective instructional units versus lecture demonstration methods of instruction <i>(ProQuest Dissertations and Theses (ERIC Number: ED085272))</i>	<b>Effect Size:</b> 0.267 <b>LCI:</b> -0.165 <b>UCI:</b> 0.7 <b>Weight:</b> 0.51 <b>Standard error:</b> 0.221	
Fisher (1967) 1_1	The relative merits of selected aspects of individualized instruction in an elementary school mathematics program <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.265 <b>LCI:</b> -0.186 <b>UCI:</b> 0.716 <b>Weight:</b> 0.503 <b>Standard error:</b> 0.23	
Goldner (1973) II	Don't Give Up on Compensatory Education: Just Make it more Relevant to Individual Needs <i>(Urban Education)</i>	<b>Effect Size:</b> 0.26 <b>LCI:</b> -0.072 <b>UCI:</b> 0.593 <b>Weight:</b> 0.543 <b>Standard error:</b> 0.17	
Slavin (1984) 1_2	Combining Cooperative Learning and Individualized Instruction: Effects on Student Mathematics Achievement, Attitudes, and Behaviors <i>(NA)</i>	<b>Effect Size:</b> 0.25 <b>LCI:</b> 0.015 <b>UCI:</b> 0.485 <b>Weight:</b> 0.57 <b>Standard error:</b> 0.12	
Krockover (1970)	A comparison of learning outcomes in CBA chemistry when group and individualized instruction techniques are employed. <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.238 <b>LCI:</b> -0.277 <b>UCI:</b> 0.754 <b>Weight:</b> 0.48 <b>Standard error:</b> 0.263	
Johnson (1972) 1_2	Minneapolis IPI Mathematics Project 1971-72: Third Year Evaluation. A Title I, ESEA Project. <i>(NA)</i>	<b>Effect Size:</b> 0.225 <b>LCI:</b> -0.212 <b>UCI:</b> 0.663 <b>Weight:</b> 0.508 <b>Standard error:</b> 0.223	
James (1969)	A comparison of group and individualized instructional techniques in seventh grade science <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.221 <b>LCI:</b> -0.314 <b>UCI:</b> 0.756 <b>Weight:</b> 0.472 <b>Standard error:</b> 0.273	
Arroyo (2010)	Improving Math Learning through Intelligent Tutoring and Basic Skills Training <i>(Intelligent Tutoring Systems)</i>	<b>Effect Size:</b> 0.219 <b>LCI:</b> -0.028 <b>UCI:</b> 0.466 <b>Weight:</b> 0.567 <b>Standard error:</b> 0.126	

Author	Title	Effect Size	Effect Size (Graph)
Gaskill (1971) 1_1	An evaluation of individually prescribed instruction in the Primary grades of the Urbana Schools. ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> 0.213 <b>LCI:</b> -0.462 <b>UCI:</b> 0.887 <b>Weight:</b> 0.42 <b>Standard error:</b> 0.344	
Slavin (1983)	Combining Student Teams and Individualized Instruction in Mathematics: An Extended Evaluation. ( <i>NA</i> )	<b>Effect Size:</b> 0.2 <b>LCI:</b> 0.117 <b>UCI:</b> 0.283 <b>Weight:</b> 0.596 <b>Standard error:</b> 0.042	
Beal (2010) 1_2	Evaluation of AnimalWatch: An intelligent tutoring system for arithmetic and fractions. ( <i>Journal of Interactive Online Learning</i> )	<b>Effect Size:</b> 0.196 <b>LCI:</b> -0.591 <b>UCI:</b> 0.983 <b>Weight:</b> 0.378 <b>Standard error:</b> 0.402	
Slavin (1984) 1_1	Combining Cooperative Learning and Individualized Instruction: Effects on Student Mathematics Achievement, Attitudes, and Behaviors ( <i>NA</i> )	<b>Effect Size:</b> 0.195 <b>LCI:</b> -0.038 <b>UCI:</b> 0.427 <b>Weight:</b> 0.571 <b>Standard error:</b> 0.119	
Grenier (2013)	Narrowing the Standardized Achievement Gap among Ethnic Subgroups ( <i>NA</i> )	<b>Effect Size:</b> 0.194 <b>LCI:</b> -0.128 <b>UCI:</b> 0.516 <b>Weight:</b> 0.547 <b>Standard error:</b> 0.164	
Glass (1970)	Individualized Instruction as a Spur to Understanding the Scientific Enterprise ( <i>The American Biology Teacher</i> )	<b>Effect Size:</b> 0.18 <b>LCI:</b> -0.458 <b>UCI:</b> 0.817 <b>Weight:</b> 0.434 <b>Standard error:</b> 0.325	
Bradford (1973)	A comparison of two methods of teaching in the elementary school as related to achievement in reading, mathematics, and self-concept of children ( <i>NA</i> )	<b>Effect Size:</b> 0.178 <b>LCI:</b> -0.058 <b>UCI:</b> 0.415 <b>Weight:</b> 0.57 <b>Standard error:</b> 0.12	
Bottge (2014)	Effects of Blended Instructional Models on Math Performance ( <i>Exceptional Children</i> )	<b>Effect Size:</b> 0.17 <b>LCI:</b> -1.006 <b>UCI:</b> 1.346 <b>Weight:</b> 0.26 <b>Standard error:</b> 0.6	
Biesinger (2008)	The Impact of an Online Remediation Site on Performance Related to High School Mathematics Proficiency ( <i>The Journal of Computers in Mathematics and Science Teaching</i> )	<b>Effect Size:</b> 0.155 <b>LCI:</b> 0.02 <b>UCI:</b> 0.29 <b>Weight:</b> 0.59 <b>Standard error:</b> 0.069	

Author	Title	Effect Size	Effect Size (Graph)
Fremont (1963)	Individualized instruction in plane geometry: A comparison of the relative effectiveness of learning plane geometry by an individualized approach as contrasted with the traditional approach of group instruction <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.148 <b>LCI:</b> -0.337 <b>UCI:</b> 0.632 <b>Weight:</b> 0.491 <b>Standard error:</b> 0.247	
Wasden (1971)	A comparative analysis of the difference in achievement between students educated in traditional and individualized schools. <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.117 <b>LCI:</b> -0.014 <b>UCI:</b> 0.248 <b>Weight:</b> 0.591 <b>Standard error:</b> 0.067	
Harper (1973) 1_2	A comparison of three elementary mathematics programs: A model for curriculum evaluation. <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.107 <b>LCI:</b> -0.504 <b>UCI:</b> 0.718 <b>Weight:</b> 0.444 <b>Standard error:</b> 0.312	
Fritz (1963)	The effect on instruction of the complementary use of audio-visual media with modified patterns in the use of the teaching staff <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.106 <b>LCI:</b> -0.314 <b>UCI:</b> 0.526 <b>Weight:</b> 0.514 <b>Standard error:</b> 0.214	
Crosby (1960)	Mathematics Individual Learning Experiment (Research Project No. 391, National Defense Education Act of 1958) <i>(NA)</i>	<b>Effect Size:</b> 0.105 <b>LCI:</b> -0.026 <b>UCI:</b> 0.235 <b>Weight:</b> 0.591 <b>Standard error:</b> 0.066	
Koenig (1972) 1_2	Individualizing instruction in science education <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.101 <b>LCI:</b> -0.095 <b>UCI:</b> 0.297 <b>Weight:</b> 0.579 <b>Standard error:</b> 0.1	
Sarkis (2004)	Cognitive Tutor Algebra 1 program evaluation: Miami– Dade County Public Schools <i>(NA)</i>	<b>Effect Size:</b> 0.099 <b>LCI:</b> 0.04 <b>UCI:</b> 0.158 <b>Weight:</b> 0.598 <b>Standard error:</b> 0.03	
Lanzilotti (2007)	An experimental evaluation of Logiocando, an intelligent tutoring hypermedia system <i>(International Journal of Artificial Intelligence in Education)</i>	<b>Effect Size:</b> 0.093 <b>LCI:</b> -0.527 <b>UCI:</b> 0.713 <b>Weight:</b> 0.44 <b>Standard error:</b> 0.316	
Hu (2012)	The Effects of a Traditional and Technology-Based After-School Program on 6th Grade Student's Mathematics Skills <i>(Journal of Computers in Mathematics and Science Teaching)</i>	<b>Effect Size:</b> 0.09 <b>LCI:</b> -0.106 <b>UCI:</b> 0.286 <b>Weight:</b> 0.579 <b>Standard error:</b> 0.1	

Author	Title	Effect Size	Effect Size (Graph)
Ludeman (1973)	Final Evaluation Report, Project Video-Tape Packages Mathematics. (NA)	<b>Effect Size:</b> 0.084 <b>LCI:</b> -0.669 <b>UCI:</b> 0.838 <b>Weight:</b> 0.39 <b>Standard error:</b> 0.384	
Brust (1972)	The relationship of Individualized instruction in learning skills to self-esteem and achievement (ProQuest Dissertations and Theses)	<b>Effect Size:</b> 0.08 <b>LCI:</b> -0.31 <b>UCI:</b> 0.47 <b>Weight:</b> 0.525 <b>Standard error:</b> 0.199	
Koenig (1972) 1_1	Individualizing instruction in science education (ProQuest Dissertations and Theses)	<b>Effect Size:</b> 0.08 <b>LCI:</b> -1.838 <b>UCI:</b> 1.999 <b>Weight:</b> 0.134 <b>Standard error:</b> 0.979	
Anderson (1971)	The development and evaluation of programmed learning for high school chemistry (ProQuest Dissertations and Theses)	<b>Effect Size:</b> 0.074 <b>LCI:</b> -0.354 <b>UCI:</b> 0.502 <b>Weight:</b> 0.511 <b>Standard error:</b> 0.218	
Scarpino (1971)	A comparison of self-paced and paced independent study and traditional study in eleventh grade chemistry (ProQuest Dissertations and Theses)	<b>Effect Size:</b> 0.072 <b>LCI:</b> -0.417 <b>UCI:</b> 0.561 <b>Weight:</b> 0.489 <b>Standard error:</b> 0.25	
Marshall (1970)	The development and evaluation of a programed supplementary guide for selected topics in high school biology (ProQuest Dissertations and Theses)	<b>Effect Size:</b> 0.071 <b>LCI:</b> -0.353 <b>UCI:</b> 0.495 <b>Weight:</b> 0.513 <b>Standard error:</b> 0.216	
Thomas (1972)	Continuous progress advanced algebra in the Lincoln Public Schools - A study of achievement and attitude toward mathematic (ProQuest Dissertations and Theses)	<b>Effect Size:</b> 0.07 <b>LCI:</b> -0.261 <b>UCI:</b> 0.401 <b>Weight:</b> 0.544 <b>Standard error:</b> 0.169	
Huang (2016)	Intelligent tutoring systems work as a math gap reducer in 6th grade after-school program (Learning and Individual Differences)	<b>Effect Size:</b> 0.068 <b>LCI:</b> -0.102 <b>UCI:</b> 0.238 <b>Weight:</b> 0.584 <b>Standard error:</b> 0.087	
Craig (2013)	The impact of a technology-based mathematics after-school program using ALEKS on student's knowledge and behaviors (Computers and Education)	<b>Effect Size:</b> 0.067 <b>LCI:</b> -0.179 <b>UCI:</b> 0.314 <b>Weight:</b> 0.567 <b>Standard error:</b> 0.126	

Author	Title	Effect Size	Effect Size (Graph)
Crosby (1960)	Individualized algebra <i>(The Mathematics Teacher)</i>	<b>Effect Size:</b> 0.066 <b>LCI:</b> -0.336 <b>UCI:</b> 0.469 <b>Weight:</b> 0.52 <b>Standard error:</b> 0.205	
Bartel (1965)	A study of the feasibility of an Individualized Instructional Program in elementary school mathematics <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.064 <b>LCI:</b> -0.012 <b>UCI:</b> 0.141 <b>Weight:</b> 0.597 <b>Standard error:</b> 0.039	
Waine (1970)	The effectiveness of a programmed textbook in teaching selected chemistry topics to high school introductory biology students. <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.06 <b>LCI:</b> -0.195 <b>UCI:</b> 0.315 <b>Weight:</b> 0.565 <b>Standard error:</b> 0.13	
Godde (1972) 1_1	A comparison of young children in achievement of general skills, adjustment and attitudes, in an individual progression curriculum organization, with young children in a traditional curriculum organization <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.052 <b>LCI:</b> -0.387 <b>UCI:</b> 0.49 <b>Weight:</b> 0.508 <b>Standard error:</b> 0.224	
Volker (1970)	Development of a multimedia system for teaching high school biology. <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.051 <b>LCI:</b> -0.169 <b>UCI:</b> 0.271 <b>Weight:</b> 0.574 <b>Standard error:</b> 0.112	
Denton (1972)	A methodological study of a computer-managed instructional program in high school physics <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.049 <b>LCI:</b> -0.545 <b>UCI:</b> 0.642 <b>Weight:</b> 0.45 <b>Standard error:</b> 0.303	
Swanson (1977)	A comparison of mastery learning feedback systems, affecting achievement in chemistry <i>(The Annual Meeting of the American Educational Research Association (ERIC Document Rekoduction Service No. ED 139 650))</i>	<b>Effect Size:</b> 0.044 <b>LCI:</b> -0.609 <b>UCI:</b> 0.698 <b>Weight:</b> 0.427 <b>Standard error:</b> 0.333	
Broussard (1971)	The Effect of an Individualized instructional approach on the Academic Achievement in Mathematics Of Inner-city Children <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.043 <b>LCI:</b> -0.251 <b>UCI:</b> 0.337 <b>Weight:</b> 0.555 <b>Standard error:</b> 0.15	
Shumaker (1973)	A comparison of study habits, study attitudes, and academic achievement in mathematics in junior high school of students taught by individually prescribed instruction and students taught by traditional methods of instruction in elementary school <i>(Dissertation Abstracts International)</i>	<b>Effect Size:</b> 0.038 <b>LCI:</b> -0.336 <b>UCI:</b> 0.411 <b>Weight:</b> 0.53 <b>Standard error:</b> 0.191	

Author	Title	Effect Size	Effect Size (Graph)
Friend (1968)	A comparison of the relative effectiveness of two methods of teaching the course Time, Space, and Matter to selected eighth grade pupils <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.032 <b>LCI:</b> -0.335 <b>UCI:</b> 0.399 <b>Weight:</b> 0.532 <b>Standard error:</b> 0.187	
Cabalo (2007)	Comparative Effectiveness of Carnegie Learning 's Cognitive Tutor Bridge to Algebra Curriculum : A Report of a Randomized Experiment in the Maui School District <i>(NA)</i>	<b>Effect Size:</b> 0.029 <b>LCI:</b> -0.182 <b>UCI:</b> 0.24 <b>Weight:</b> 0.576 <b>Standard error:</b> 0.108	
Malcom (1973)	Analysis of attitude, achievement, and student profiles as a result of individualised instruction in mathematics <i>(Dissertation Abstracts International)</i>	<b>Effect Size:</b> 0.021 <b>LCI:</b> -0.158 <b>UCI:</b> 0.2 <b>Weight:</b> 0.582 <b>Standard error:</b> 0.092	
Clough (1971)	An analysis of student achievement in mathematics when Individually Prescribed Instruction (IPI) is compared to the current instructional program <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0.019 <b>LCI:</b> -0.155 <b>UCI:</b> 0.193 <b>Weight:</b> 0.583 <b>Standard error:</b> 0.089	
Schaefer (1972)	The relationship of teaching methods to self-esteem and achievement in mathematics among seventh and eighth grade student <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> 0 <b>LCI:</b> -0.226 <b>UCI:</b> 0.226 <b>Weight:</b> 0.573 <b>Standard error:</b> 0.115	
Ord (1964)	An evaluation of programmed instruction in grade eleven physics and grade twelve chemistry as a method of teaching <i>(Ontario Journal of Educational Research)</i>	<b>Effect Size:</b> -0.005 <b>LCI:</b> -0.31 <b>UCI:</b> 0.299 <b>Weight:</b> 0.552 <b>Standard error:</b> 0.156	
Penn (1972)	An experimental study involving the use of contract evaluation in a chemistry course and in a traditional high school chemistry course. <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> -0.01 <b>LCI:</b> -0.383 <b>UCI:</b> 0.363 <b>Weight:</b> 0.53 <b>Standard error:</b> 0.19	
Burchyett (1972) 1_2	A comparison of the effects of non-graded, multi-age team-teaching vs the modified self-contained classroom at the elementary level <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> -0.022 <b>LCI:</b> -0.355 <b>UCI:</b> 0.311 <b>Weight:</b> 0.543 <b>Standard error:</b> 0.17	
Penner (1972)	An analysis of using an individual progress approach to the teaching of trigonometry in the Omaha, Nebraska, Public High School <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> -0.023 <b>LCI:</b> -0.294 <b>UCI:</b> 0.248 <b>Weight:</b> 0.561 <b>Standard error:</b> 0.138	

Author	Title	Effect Size	Effect Size (Graph)
Godde (1972) 1_2	A comparison of young children in achievement of general skills, adjustment and attitudes, in an individual progression curriculum organization, with young children in a traditional curriculum organization ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> -0.027 <b>LCI:</b> -0.436 <b>UCI:</b> 0.383 <b>Weight:</b> 0.518 <b>Standard error:</b> 0.209	
Burchyett (1972) 1_3	A comparison of the effects of non-graded, multi-age team-teaching vs the modified self-contained classroom at the elementary level ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> -0.029 <b>LCI:</b> -0.362 <b>UCI:</b> 0.304 <b>Weight:</b> 0.543 <b>Standard error:</b> 0.17	
Alexander (1968)	An educational innovation: Independent study in eighth grade social studies ( <i>Dissertation Abstracts, 1968, 29,11. (University Microfilms No. 68-9589)</i> )	<b>Effect Size:</b> -0.031 <b>LCI:</b> -0.651 <b>UCI:</b> 0.589 <b>Weight:</b> 0.44 <b>Standard error:</b> 0.316	
Sutton (1967)	Individualizing junior high school mathematics instruction. final report ( <i>NA</i> )	<b>Effect Size:</b> -0.066 <b>LCI:</b> -0.188 <b>UCI:</b> 0.056 <b>Weight:</b> 0.592 <b>Standard error:</b> 0.062	
Smith (2001)	The effect of the Carnegie Algebra Tutor on student achievement and attitude in introductory high school algebra ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> -0.067 <b>LCI:</b> -0.253 <b>UCI:</b> 0.119 <b>Weight:</b> 0.581 <b>Standard error:</b> 0.095	
Call (1974)	A comparison of individualized and traditional methods for teaching high school chemistry ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> -0.076 <b>LCI:</b> -0.718 <b>UCI:</b> 0.565 <b>Weight:</b> 0.432 <b>Standard error:</b> 0.327	
Parr (1981) II	Individualized versus Group Instruction in Bilingual Education: A Two-Year Study ( <i>The Elementary School Journal</i> )	<b>Effect Size:</b> -0.076 <b>LCI:</b> -0.669 <b>UCI:</b> 0.518 <b>Weight:</b> 0.45 <b>Standard error:</b> 0.303	
Wheaton (1971)	An evaluation of an individualized learning program in a California union high school district ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> -0.091 <b>LCI:</b> -0.657 <b>UCI:</b> 0.475 <b>Weight:</b> 0.46 <b>Standard error:</b> 0.289	
Kahle (1976)	An analysis of an alternative instructional model for disadvantaged students ( <i>Science Education</i> )	<b>Effect Size:</b> -0.096 <b>LCI:</b> -0.477 <b>UCI:</b> 0.285 <b>Weight:</b> 0.528 <b>Standard error:</b> 0.194	

Author	Title	Effect Size	Effect Size (Graph)
Inskip (1969)	The effectiveness of multiple media approach in teaching certain concepts in high school chemistry ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> -0.126 <b>LCI:</b> -0.844 <b>UCI:</b> 0.592 <b>Weight:</b> 0.403 <b>Standard error:</b> 0.366	
Burchyett (1972) 1_1	A comparison of the effects of non-graded, multi-age team-teaching vs the modified self-contained classroom at the elementary level ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> -0.128 <b>LCI:</b> -0.502 <b>UCI:</b> 0.245 <b>Weight:</b> 0.53 <b>Standard error:</b> 0.191	
Slattery (1974)	An analysis of individualized science instruction in senior high school ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> -0.15 <b>LCI:</b> -0.521 <b>UCI:</b> 0.221 <b>Weight:</b> 0.531 <b>Standard error:</b> 0.189	
Corbin (1974)	An individualized approach: An evaluation of cognitive and affective learning in seventh and eighth grade mathematics classes ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> -0.151 <b>LCI:</b> -0.427 <b>UCI:</b> 0.124 <b>Weight:</b> 0.56 <b>Standard error:</b> 0.141	
Englert (1972)	A comparative study of the effects on achievement and changes in attitude of senior high school students enrolled in first year algebra under two different teaching approaches ( <i>NA</i> )	<b>Effect Size:</b> -0.163 <b>LCI:</b> -0.516 <b>UCI:</b> 0.19 <b>Weight:</b> 0.537 <b>Standard error:</b> 0.18	
Pane (2010)	An Experiment to Evaluate the Efficacy of Cognitive Tutor Geometry ( <i>Journal of Research on Educational Effectiveness</i> )	<b>Effect Size:</b> -0.19 <b>LCI:</b> -0.347 <b>UCI:</b> -0.033 <b>Weight:</b> 0.586 <b>Standard error:</b> 0.08	
Abate (1972)	An evaluation of an Individualized Educational System in an Elementary School ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> -0.215 <b>LCI:</b> -0.595 <b>UCI:</b> 0.166 <b>Weight:</b> 0.528 <b>Standard error:</b> 0.194	
Opeola (1985)	The Language Issue and the Use of Programmed Instruction in Science Education in Nigeria ( <i>The Journal of Negro Education</i> )	<b>Effect Size:</b> -0.246 <b>LCI:</b> -0.501 <b>UCI:</b> 0.008 <b>Weight:</b> 0.566 <b>Standard error:</b> 0.13	
Crocker (1974)	A comparison of structured and unstructured modes of teaching science process activities ( <i>Paper presented at the Annual Meeting of the National Association for Research in Science Teaching (47th, Chicago, Illinois, April 1974)</i> )	<b>Effect Size:</b> -0.25 <b>LCI:</b> -0.61 <b>UCI:</b> 0.109 <b>Weight:</b> 0.535 <b>Standard error:</b> 0.183	

Author	Title	Effect Size	Effect Size (Graph)
Ritter (1975)	A comparison of achievement for two methods of instruction with the use of behavioral objectives. ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> -0.254 <b>LCI:</b> -0.711 <b>UCI:</b> 0.204 <b>Weight:</b> 0.501 <b>Standard error:</b> 0.234	
Beal (2007)	On-line tutoring for math achievement testing: A controlled evaluation. ( <i>Journal of Interactive Online Learning</i> )	<b>Effect Size:</b> -0.256 <b>LCI:</b> -0.578 <b>UCI:</b> 0.067 <b>Weight:</b> 0.546 <b>Standard error:</b> 0.165	
Ferney (1969)	An evaluation of a program of learning in accordance with needs ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> -0.261 <b>LCI:</b> -0.465 <b>UCI:</b> -0.056 <b>Weight:</b> 0.577 <b>Standard error:</b> 0.104	
Walles (2005)	Effects of web-based tutoring software on math test performance: A look at gender, math-fact retrieval ability, spatial ability and type of help ( <i>NA</i> )	<b>Effect Size:</b> -0.292 <b>LCI:</b> -0.579 <b>UCI:</b> -0.006 <b>Weight:</b> 0.557 <b>Standard error:</b> 0.146	
Amendola (1973)	Changes in Attitude and Achievement Effected by a Continuous Progress Educational Program at the Elementary school level ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> -0.312 <b>LCI:</b> -0.614 <b>UCI:</b> -0.01 <b>Weight:</b> 0.553 <b>Standard error:</b> 0.154	
Fielder (1971) 1_1	The Comparative Effect of Two Years of Individually Prescribed Instruction on Student Achievement in Mathematics ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> -0.352 <b>LCI:</b> -0.646 <b>UCI:</b> -0.058 <b>Weight:</b> 0.555 <b>Standard error:</b> 0.15	
Verheul (1971)	A comparison of the effects of individually prescribed instruction and conventional textbook instruction on mathematics learning of selected sixth grade students. ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> -0.355 <b>LCI:</b> -0.542 <b>UCI:</b> -0.168 <b>Weight:</b> 0.581 <b>Standard error:</b> 0.096	
Earnshaw (1972)	Open Education as a humanistic intervention strategy ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> -0.379 <b>LCI:</b> -0.676 <b>UCI:</b> -0.081 <b>Weight:</b> 0.554 <b>Standard error:</b> 0.152	
Hanneman (1972)	An experimental comparison of independent study and conventional group instruction in tenth grade geometry ( <i>ProQuest Dissertations and Theses</i> )	<b>Effect Size:</b> -0.387 <b>LCI:</b> -0.801 <b>UCI:</b> 0.027 <b>Weight:</b> 0.517 <b>Standard error:</b> 0.211	

Author	Title	Effect Size	Effect Size (Graph)
Cohen (1970)	An investigation of the effectiveness of certain scheduling procedures on mathematical achievement of junior high school pupils (NA)	<b>Effect Size:</b> -0.424 <b>LCI:</b> -0.664 <b>UCI:</b> -0.185 <b>Weight:</b> 0.569 <b>Standard error:</b> 0.122	
Fielder (1971) 1_2	The Comparative Effect of Two Years of Individually Prescribed Instruction on Student Achievement in Mathematics (ProQuest Dissertations and Theses)	<b>Effect Size:</b> -0.433 <b>LCI:</b> -0.722 <b>UCI:</b> -0.144 <b>Weight:</b> 0.556 <b>Standard error:</b> 0.148	
Crangle (1971)	An evaluative study of the northwest junior high school individualised mathematics program (ProQuest Dissertations and Theses)	<b>Effect Size:</b> -0.438 <b>LCI:</b> -0.942 <b>UCI:</b> 0.066 <b>Weight:</b> 0.484 <b>Standard error:</b> 0.257	
Summerlin (1971)	A feasibility study of tutorial type computer assisted instruction in selected topics in high school chemistry. (ProQuest Dissertations and Theses)	<b>Effect Size:</b> -0.44 <b>LCI:</b> -0.818 <b>UCI:</b> -0.061 <b>Weight:</b> 0.528 <b>Standard error:</b> 0.193	
Summerlin (1973)	A Study of Tutorial-Type Computer Assisted Instruction in High School Chemistry (Journal of Research in Science Teaching,)	<b>Effect Size:</b> -0.44 <b>LCI:</b> -0.818 <b>UCI:</b> -0.061 <b>Weight:</b> 0.528 <b>Standard error:</b> 0.193	
Taylor (1972)	Individually Prescribed Instruction Program (Mathematics), Disadvantaged Pupil Program Funds, Fund Number 97-19, 1971-72 Evaluation. (NA)	<b>Effect Size:</b> -0.464 <b>LCI:</b> -0.61 <b>UCI:</b> -0.318 <b>Weight:</b> 0.588 <b>Standard error:</b> 0.074	
Fanusi (2015)	The effect of ALEKS math support on standardized math test scores in middle school (NA)	<b>Effect Size:</b> -0.488 <b>LCI:</b> -0.726 <b>UCI:</b> -0.25 <b>Weight:</b> 0.57 <b>Standard error:</b> 0.122	
Staniskis (1977)	A comparison of student content achievement in biology between computer managed instructional and non computer managed instructional biology courses. (ProQuest Dissertations and Theses)	<b>Effect Size:</b> -0.526 <b>LCI:</b> -1.04 <b>UCI:</b> -0.013 <b>Weight:</b> 0.48 <b>Standard error:</b> 0.262	
Hirsch (1972)	Experimental Study Comparing The Effects of Guided Discovery and Individualized Instruction on Initial Learning, Transfer, and Retention of Mathematical Concepts and Generalizations. (ProQuest Dissertations and Theses)	<b>Effect Size:</b> -0.549 <b>LCI:</b> -0.595 <b>UCI:</b> -0.502 <b>Weight:</b> 0.599 <b>Standard error:</b> 0.024	

Author	Title	Effect Size	Effect Size (Graph)
Eshleman (1967)	A comparison of programmed instruction with conventional methods of teaching two units of eighth grade science. <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> -0.562 <b>LCI:</b> -0.703 <b>UCI:</b> -0.422 <b>Weight:</b> 0.589 <b>Standard error:</b> 0.072	
Herceg (1972)	Study of the Coordinator's Role in the Introduction of Formally Presented Objectives and Individualized Learning Rates in Computer-assisted Mathematics <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> -0.565 <b>LCI:</b> -0.979 <b>UCI:</b> -0.152 <b>Weight:</b> 0.517 <b>Standard error:</b> 0.211	
Martinez-Perez (1973)	A study of self-concept, attitudes toward science and achievement on a sample of seventh grade ISCS students versus seventh grade students in a non-individualized science class <i>(Dissertation Abstracts International)</i>	<b>Effect Size:</b> -0.575 <b>LCI:</b> -0.844 <b>UCI:</b> -0.305 <b>Weight:</b> 0.561 <b>Standard error:</b> 0.138	
Mertes (2013)	A Mathematics Education Comparative Analysis of ALEKS Technology and Direct Classroom Instruction <i>(NA)</i>	<b>Effect Size:</b> -0.67 <b>LCI:</b> -0.95 <b>UCI:</b> -0.39 <b>Weight:</b> 0.559 <b>Standard error:</b> 0.143	
Shinfeld (1973)	An experimental study to determine the effects of an independent study approach to high school chemistry <i>(ProQuest Dissertations and Theses)</i>	<b>Effect Size:</b> -0.673 <b>LCI:</b> -1.056 <b>UCI:</b> -0.29 <b>Weight:</b> 0.527 <b>Standard error:</b> 0.195	
Simmons (1971)	Independent-Study Methods and the Gifted Biology Student <i>(The American Biology Teacher)</i>	<b>Effect Size:</b> -0.69 <b>LCI:</b> -1.195 <b>UCI:</b> -0.184 <b>Weight:</b> 0.483 <b>Standard error:</b> 0.258	
Glaser (1966)	Studies of the use of programmed instruction in the intact classroom <i>(Psychology in the Schools)</i>	<b>Effect Size:</b> -0.716 <b>LCI:</b> -1.075 <b>UCI:</b> -0.356 <b>Weight:</b> 0.535 <b>Standard error:</b> 0.184	
Evans (1985) II	Cognitive abilities, conditions of learning, and the early development of reading skill. <i>(Reading Research Quarterly)</i>	<b>Effect Size:</b> -0.725 <b>LCI:</b> -1.13 <b>UCI:</b> -0.32 <b>Weight:</b> 0.519 <b>Standard error:</b> 0.207	
Ardac (2002)	Effectiveness of Computer-Based Chemistry Instruction in Enhancing the Learning of Content and Variable Control Under Guided versus Unguided Conditions <i>(Journal of Science Education and Technology)</i>	<b>Effect Size:</b> -0.762 <b>LCI:</b> -1.383 <b>UCI:</b> -0.141 <b>Weight:</b> 0.44 <b>Standard error:</b> 0.317	

Author	Title	Effect Size	Effect Size (Graph)
Fisher (1968) 1_2	An Investigation of Three Approaches to the Teaching of Mathematics in the Elementary School (NA)	<b>Effect Size:</b> -1.052 <b>LCI:</b> -1.487 <b>UCI:</b> -0.618 <b>Weight:</b> 0.509 <b>Standard error:</b> 0.222	
O'Neill (1970)	An analysis on selected variables of the effect of a systems approach to teaching specific mathematical skills to fifth grade students from a disadvantaged area (ProQuest Dissertations and Theses)	<b>Effect Size:</b> -1.112 <b>LCI:</b> -1.61 <b>UCI:</b> -0.614 <b>Weight:</b> 0.486 <b>Standard error:</b> 0.254	
Mohd (2016)	Development of computer play pedagogy intervention for children with low conceptual understanding in basic mathematics operation using the dyscalculia feature approach (Interactive Learning Environments)	<b>Effect Size:</b> -1.547 <b>LCI:</b> -2.185 <b>UCI:</b> -0.909 <b>Weight:</b> 0.433 <b>Standard error:</b> 0.326	