

## Arts participation

Moderate impact for very low cost based on moderate evidence

Arts participation is defined as involvement in artistic and creative activities, such as dance, drama, music, painting, or sculpture.

### Implementation cost



### Evidence strength



### Impact (months)



### Subject breakdown

maths: 11  
 reading: 37  
 toolkit: 80

### School phase breakdown

primary: 68  
 secondary: 12  
 toolkit: 80

## 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](#)

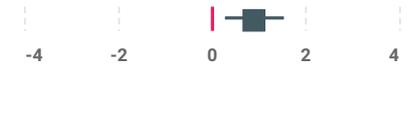
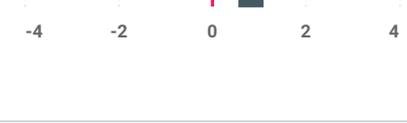
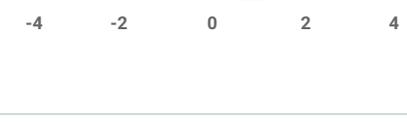
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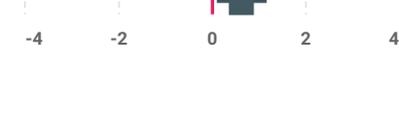
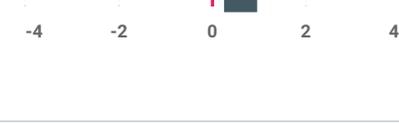
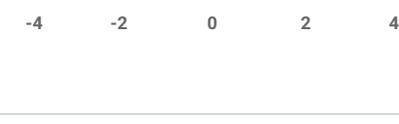
## References (80)

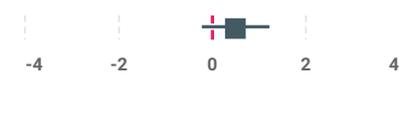
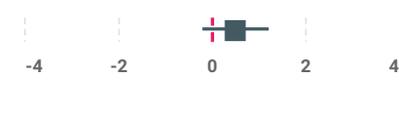
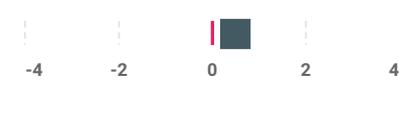
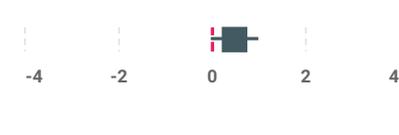
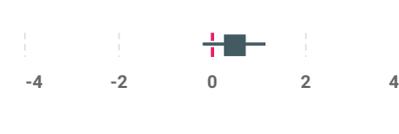
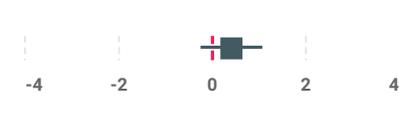
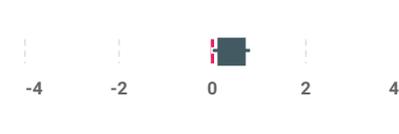
The forest plot below is a graphical representation of the results of all included studies in this Toolkit strand. It shows the effect size and confidence interval of each study, and whether the particular intervention in that study was more or less effective than standard practice or other alternative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

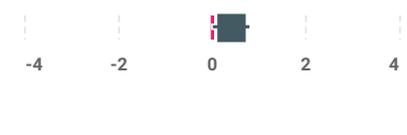
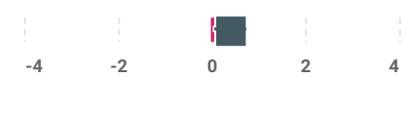
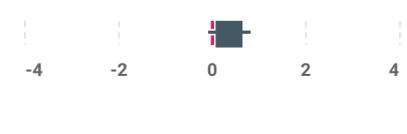
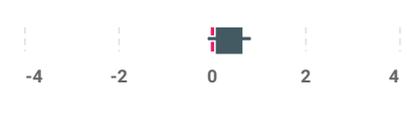
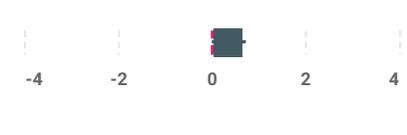
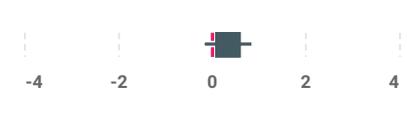
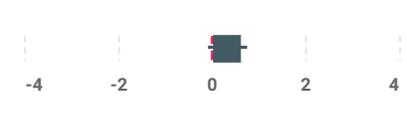
Studies that show an effect size result on the right-hand side of the red vertical red indicate that the particular intervention studied was more effective than standard practice. Studies that show an effect size on the left-hand side of the red vertical indicate that the particular intervention studied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

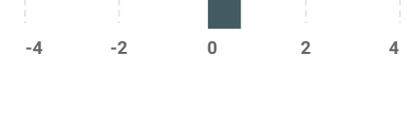
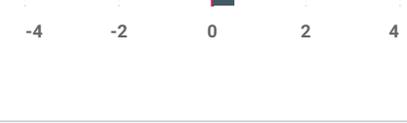
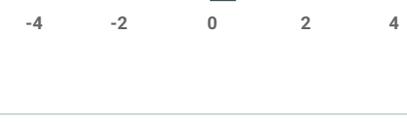
Author	Title	Effect Size	Effect Size (Graph)
Roden (2014)	Does music training enhance working memory performance? Findings from a quasi-experimental longitudinal study ( <i>Psychology of Music</i> )	<b>Effect Size:</b> 1.818 <b>LCI:</b> 1.151 <b>UCI:</b> 2.485 <b>Weight:</b> 1.077 <b>Standard error:</b> 0.34	
Moore (1990)	The art of planning: Drama as rehearsal for writing in the primary grades. ( <i>Youth Theatre Journal</i> )	<b>Effect Size:</b> 1.504 <b>LCI:</b> 0.802 <b>UCI:</b> 2.205 <b>Weight:</b> 1.038 <b>Standard error:</b> 0.358	
Herrera (2011)	Effects of phonological and musical training on the reading readiness of native- and foreign-Spanish-speaking children. ( <i>Psychology of Music</i> )	<b>Effect Size:</b> 1.384 <b>LCI:</b> 0.589 <b>UCI:</b> 2.179 <b>Weight:</b> 0.936 <b>Standard error:</b> 0.406	
Çokadar (2009)	Teaching ecosystems and matter cycles with creative drama activities. ( <i>Journal of Science Education and Technology</i> )	<b>Effect Size:</b> 1.089 <b>LCI:</b> 0.459 <b>UCI:</b> 1.719 <b>Weight:</b> 1.121 <b>Standard error:</b> 0.322	
Conner (1973)	An investigation of the effects of selected educational dramatics techniques on general cognitive abilities ( <i>NA</i> )	<b>Effect Size:</b> 1 <b>LCI:</b> 0.609 <b>UCI:</b> 1.391 <b>Weight:</b> 1.412 <b>Standard error:</b> 0.2	

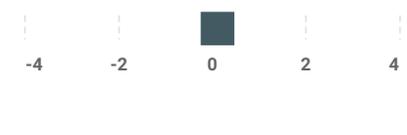
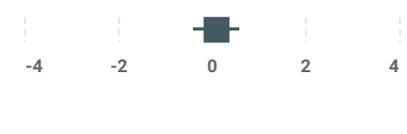
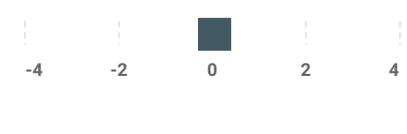
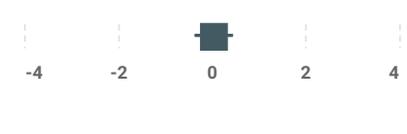
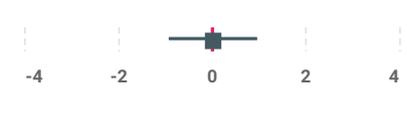
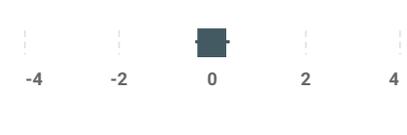
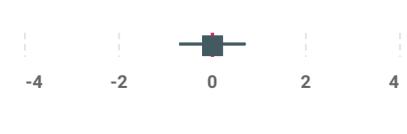
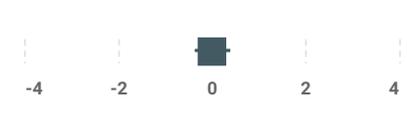
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Cormack (2003)	Creative drama in the writing process: The impact on elementary students' short stories (NA)	<b>Effect Size:</b> 0.949 <b>LCI:</b> 0.385 <b>UCI:</b> 1.514 <b>Weight:</b> 1.2 <b>Standard error:</b> 0.288	
Hensel (1973)	The development, implementation, and evaluation of a creative dramatics program for kindergarten children (NA)	<b>Effect Size:</b> 0.899 <b>LCI:</b> 0.249 <b>UCI:</b> 1.549 <b>Weight:</b> 1.097 <b>Standard error:</b> 0.332	
Biggs (2008) AP	Using an interactive singing software program: A comparative study of struggling middle school readers (Reading Psychology)	<b>Effect Size:</b> 0.852 <b>LCI:</b> 0.246 <b>UCI:</b> 1.459 <b>Weight:</b> 1.15 <b>Standard error:</b> 0.309	
Risemberg (1992)	Using mime to improve children's writing of autobiographical narratives. (Journal of Research and Development in Education)	<b>Effect Size:</b> 0.842 <b>LCI:</b> 0.245 <b>UCI:</b> 1.439 <b>Weight:</b> 1.161 <b>Standard error:</b> 0.304	
Rauscher (1997)	Music training causes long-term enhancement of preschool children's spatialtemporal reasoning. (Neurological Research)	<b>Effect Size:</b> 0.833 <b>LCI:</b> 0.288 <b>UCI:</b> 1.379 <b>Weight:</b> 1.224 <b>Standard error:</b> 0.278	
Arieli (2007)	The integration of creative drama into science teaching (NA)	<b>Effect Size:</b> 0.806 <b>LCI:</b> 0.285 <b>UCI:</b> 1.327 <b>Weight:</b> 1.254 <b>Standard error:</b> 0.266	
Rauscher (2000)	Classroom keyboard instruction improves kindergarten children's spatial-temporal performance: A field experiment (Early Childhood Research Quarterly)	<b>Effect Size:</b> 0.788 <b>LCI:</b> 0.268 <b>UCI:</b> 1.308 <b>Weight:</b> 1.255 <b>Standard error:</b> 0.266	
Fernsler (2003)	A comparison between the test scores of third grade children who receive drama in place of traditional social studies instruction and third grade children who receive traditional social studies instruction (NA)	<b>Effect Size:</b> 0.774 <b>LCI:</b> 0.032 <b>UCI:</b> 1.516 <b>Weight:</b> 0.993 <b>Standard error:</b> 0.379	
Norton (1973)	Symbolic arts: The effect of movement and drama upon the oral communication of children in grade two. (NA)	<b>Effect Size:</b> 0.702 <b>LCI:</b> 0.285 <b>UCI:</b> 1.118 <b>Weight:</b> 1.381 <b>Standard error:</b> 0.213	

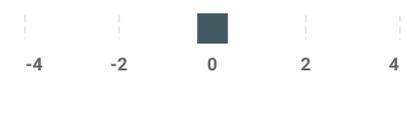
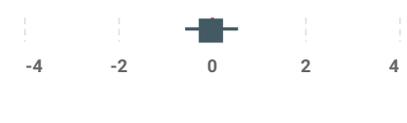
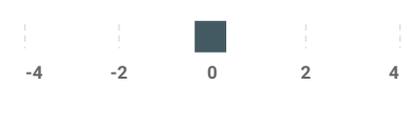
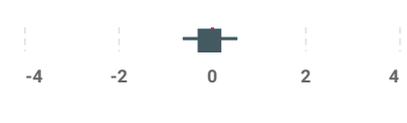
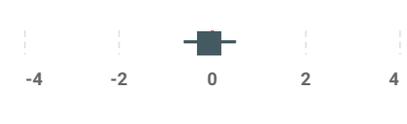
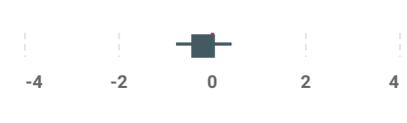
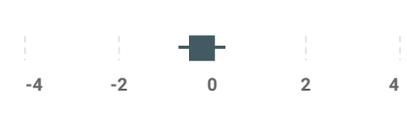
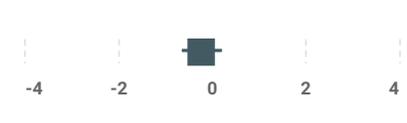
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Hendrix (2011)	Using creative dramatics to foster conceptual learning in a science enrichment program (NA)	<b>Effect Size:</b> 0.697 <b>LCI:</b> 0.04 <b>UCI:</b> 1.354 <b>Weight:</b> 1.089 <b>Standard error:</b> 0.335	
Orsmond (1999)	Cognitive, musical, and environmental correlates of early music instruction. ( <i>Psychology of Music</i> )	<b>Effect Size:</b> 0.679 <b>LCI:</b> 0.055 <b>UCI:</b> 1.303 <b>Weight:</b> 1.129 <b>Standard error:</b> 0.318	
Hunt (2012)	"Have you brought your singing voice?" An Investigation into Whether a Small Group Singing Intervention Can Improve Phonological Discrimination in Young Children. (NA)	<b>Effect Size:</b> 0.676 <b>LCI:</b> 0.019 <b>UCI:</b> 1.333 <b>Weight:</b> 1.09 <b>Standard error:</b> 0.335	
Lyon-Haley (1978)	Training advantaged and disadvantaged Black kindergartners in sociodrama: Effects on creativity and free recall of oral language (NA)	<b>Effect Size:</b> 0.628 <b>LCI:</b> 0.076 <b>UCI:</b> 1.18 <b>Weight:</b> 1.216 <b>Standard error:</b> 0.281	
McMahon (2003)	Basic reading through dance program: the impact on first-grade students' basic reading skills. ( <i>Education Review</i> )	<b>Effect Size:</b> 0.587 <b>LCI:</b> 0.427 <b>UCI:</b> 0.747 <b>Weight:</b> 1.633 <b>Standard error:</b> 0.082	
Hole (2013)	The impact of an auditory training programme (The Listening Programme) on the auditory processing and reading skills of mainstream school children (NA)	<b>Effect Size:</b> 0.562 <b>LCI:</b> -0.443 <b>UCI:</b> 1.567 <b>Weight:</b> 0.739 <b>Standard error:</b> 0.513	
Rose (2000)	Imagery-based learning: Improving elementary students' reading comprehension with drama techniques ( <i>The Journal of Educational Research</i> )	<b>Effect Size:</b> 0.526 <b>LCI:</b> 0.254 <b>UCI:</b> 0.799 <b>Weight:</b> 1.541 <b>Standard error:</b> 0.139	
Knudson (1970)	The effect of pupil-prepared video taped drama on the language development of selected rural children (NA)	<b>Effect Size:</b> 0.519 <b>LCI:</b> 0.511 <b>UCI:</b> 0.527 <b>Weight:</b> 1.686 <b>Standard error:</b> 0.004	
Bilhartz (1999)	The Effect of Early Music Training on Child Cognitive Development ( <i>Journal of Applied Developmental Psychology</i> )	<b>Effect Size:</b> 0.514 <b>LCI:</b> 0.04 <b>UCI:</b> 0.988 <b>Weight:</b> 1.312 <b>Standard error:</b> 0.242	

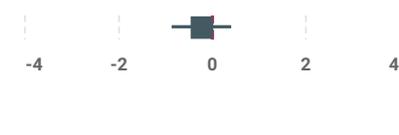
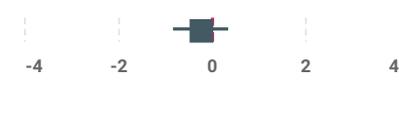
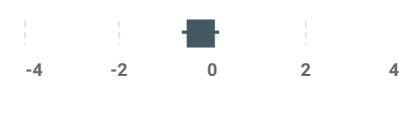
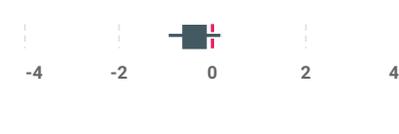
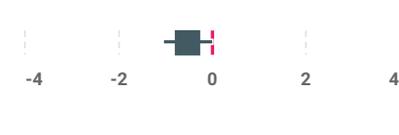
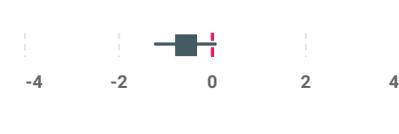
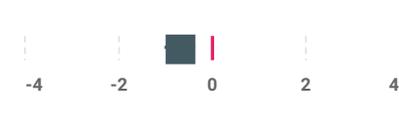
Author	Title	Effect Size	Effect Size (Graph)
Vogel (1975)	The effects of creative dramatics on young children with specific learning disabilities (NA)	<b>Effect Size:</b> 0.496 <b>LCI:</b> -0.245 <b>UCI:</b> 1.237 <b>Weight:</b> 0.993 <b>Standard error:</b> 0.378	
Gromko (1998)	The Effect of Music Training on Preschoolers' Spatial-Temporal Task Performance ( <i>Journal of Research in Music Education</i> )	<b>Effect Size:</b> 0.494 <b>LCI:</b> -0.234 <b>UCI:</b> 1.223 <b>Weight:</b> 1.008 <b>Standard error:</b> 0.372	
Pate (1977)	An investigation of the effects of creative drama upon reading ability, verbal growth, vocabulary development, and self-concept of secondary school students. (NA)	<b>Effect Size:</b> 0.486 <b>LCI:</b> 0.172 <b>UCI:</b> 0.801 <b>Weight:</b> 1.498 <b>Standard error:</b> 0.16	
Schellenberg (2004) 1_1	Music Lessons Enhance IQ ( <i>Psychological Science</i> )	<b>Effect Size:</b> 0.478 <b>LCI:</b> -0.013 <b>UCI:</b> 0.97 <b>Weight:</b> 1.29 <b>Standard error:</b> 0.251	
Portowitz (2014)	In Harmony: A technology-based music education model to enhance musical understanding and general learning skills ( <i>International Journal of Music Education</i> )	<b>Effect Size:</b> 0.473 <b>LCI:</b> -0.055 <b>UCI:</b> 1 <b>Weight:</b> 1.246 <b>Standard error:</b> 0.269	
Wagner (1986)	The effects of role playing on written persuasion: An age and channel comparison of fourth and eighth graders (NA)	<b>Effect Size:</b> 0.469 <b>LCI:</b> 0.063 <b>UCI:</b> 0.875 <b>Weight:</b> 1.394 <b>Standard error:</b> 0.207	
McFadden (2010)	Using theatre arts to enhance literacy skills at the second grade level (NA)	<b>Effect Size:</b> 0.463 <b>LCI:</b> -0.229 <b>UCI:</b> 1.155 <b>Weight:</b> 1.049 <b>Standard error:</b> 0.353	
DuPont (1992)	The effectiveness of creative drama as an instructional strategy to enhance the reading comprehension skills of fifth-grade remedial readers ( <i>Reading Research and Instruction</i> )	<b>Effect Size:</b> 0.406 <b>LCI:</b> -0.273 <b>UCI:</b> 1.085 <b>Weight:</b> 1.064 <b>Standard error:</b> 0.346	
Duatepe (2004)	The effects of drama based instruction on seventh grade students' geometry achievement, Van Hiele geometric thinking levels, attitudes towards mathematics and geometry. (NA)	<b>Effect Size:</b> 0.406 <b>LCI:</b> -0.01 <b>UCI:</b> 0.822 <b>Weight:</b> 1.383 <b>Standard error:</b> 0.212	

Author	Title	Effect Size	Effect Size (Graph)
Fleming (2004)	The impact of drama on pupils' language, mathematics, and attitudes in two primary schools. ( <i>Research in Drama Education</i> )	<b>Effect Size:</b> 0.4 <b>LCI:</b> -0.01 <b>UCI:</b> 0.81 <b>Weight:</b> 1.389 <b>Standard error:</b> 0.209	
Cardarelli (2003)	The effects of music instrumental training on performance on the reading and mathematics portions of the Florida Comprehensive Achievement Test for third grade students ( <i>NA</i> )	<b>Effect Size:</b> 0.381 <b>LCI:</b> 0.022 <b>UCI:</b> 0.74 <b>Weight:</b> 1.449 <b>Standard error:</b> 0.183	
Schellenberg (2004) 1_3	Music Lessons Enhance IQ ( <i>Psychological Science</i> )	<b>Effect Size:</b> 0.364 <b>LCI:</b> -0.109 <b>UCI:</b> 0.837 <b>Weight:</b> 1.313 <b>Standard error:</b> 0.241	
Weidner (1993)	The effects of creative dramatics activities on the story retellings of kindergartners ( <i>NA</i> )	<b>Effect Size:</b> 0.362 <b>LCI:</b> -0.367 <b>UCI:</b> 1.09 <b>Weight:</b> 1.008 <b>Standard error:</b> 0.372	
Schellenberg (2004) 1_2	Music Lessons Enhance IQ ( <i>Psychological Science</i> )	<b>Effect Size:</b> 0.36 <b>LCI:</b> -0.12 <b>UCI:</b> 0.84 <b>Weight:</b> 1.304 <b>Standard error:</b> 0.245	
Fischer (1989)	Effects of a development drama-inquiry process on creative and critical thinking skills in early adolescent students ( <i>NA</i> )	<b>Effect Size:</b> 0.349 <b>LCI:</b> -0.033 <b>UCI:</b> 0.732 <b>Weight:</b> 1.422 <b>Standard error:</b> 0.195	
Debreli (2011)	The effect of creative drama based instruction on seventh grade students' achievement in ratio and proportion concepts and attitudes toward mathematics. ( <i>NA</i> )	<b>Effect Size:</b> 0.334 <b>LCI:</b> -0.185 <b>UCI:</b> 0.852 <b>Weight:</b> 1.257 <b>Standard error:</b> 0.265	
Myant (2008)	Can music make a difference? A small scale longitudinal study into the effects of music instruction in nursery on later reading ability ( <i>Educational and Child Psychology</i> )	<b>Effect Size:</b> 0.323 <b>LCI:</b> -0.114 <b>UCI:</b> 0.76 <b>Weight:</b> 1.357 <b>Standard error:</b> 0.223	
Williams (1973)	Effects of a vocabulary program set to music on basic first grade reading skills. ( <i>NA</i> )	<b>Effect Size:</b> 0.278 <b>LCI:</b> 0.082 <b>UCI:</b> 0.475 <b>Weight:</b> 1.607 <b>Standard error:</b> 0.1	

Author	Title	Effect Size	Effect Size (Graph)
Saab (1987)	The effects of creative drama methods on mathematics achievement, attitudes and creativity (NA)	<b>Effect Size:</b> 0.277 <b>LCI:</b> -0.195 <b>UCI:</b> 0.749 <b>Weight:</b> 1.314 <b>Standard error:</b> 0.241	
Thomson (2013) AP	Auditory processing interventions and developmental dyslexia: a comparison of phonemic and rhythmic approaches. (Reading and Writing)	<b>Effect Size:</b> 0.268 <b>LCI:</b> -0.601 <b>UCI:</b> 1.136 <b>Weight:</b> 0.861 <b>Standard error:</b> 0.443	
Branch (2003) AP	Extracurricular activities and academic achievement (NA)	<b>Effect Size:</b> 0.26 <b>LCI:</b> 0.091 <b>UCI:</b> 0.428 <b>Weight:</b> 1.627 <b>Standard error:</b> 0.086	
Lunz (1974)	Creative dramatics and communication effectiveness. The study of a process. (Children's Theatre Review)	<b>Effect Size:</b> 0.249 <b>LCI:</b> -0.382 <b>UCI:</b> 0.879 <b>Weight:</b> 1.121 <b>Standard error:</b> 0.322	
Roberts (1978)	An experimental study of the relationship between musical note-reading and language reading. (NA)	<b>Effect Size:</b> 0.225 <b>LCI:</b> -0.462 <b>UCI:</b> 0.912 <b>Weight:</b> 1.054 <b>Standard error:</b> 0.351	
Kaviani (2014)	Can music lessons increase the performance of preschool children in IQ tests? (Cognitive processing)	<b>Effect Size:</b> 0.212 <b>LCI:</b> -0.296 <b>UCI:</b> 0.72 <b>Weight:</b> 1.27 <b>Standard error:</b> 0.259	
Walker (2011)	Contribution of drama-based strategies (Youth Theatre Journal,)	<b>Effect Size:</b> 0.192 <b>LCI:</b> -0.186 <b>UCI:</b> 0.57 <b>Weight:</b> 1.427 <b>Standard error:</b> 0.193	
Fizzano (1999)	The impact of story drama on the reading comprehension, oral language complexity, and the attitudes of third graders (NA)	<b>Effect Size:</b> 0.18 <b>LCI:</b> -0.16 <b>UCI:</b> 0.52 <b>Weight:</b> 1.47 <b>Standard error:</b> 0.174	
Laurin (2010)	The effect of story drama on children's writing skills (NA)	<b>Effect Size:</b> 0.15 <b>LCI:</b> -0.443 <b>UCI:</b> 0.742 <b>Weight:</b> 1.166 <b>Standard error:</b> 0.302	

Author	Title	Effect Size	Effect Size (Graph)
Menzies (2016)	Hallé SHINE on Manchester (NA)	<b>Effect Size:</b> 0.1 <b>LCI:</b> 0.002 <b>UCI:</b> 0.198 <b>Weight:</b> 1.665 <b>Standard error:</b> 0.05	
Andrews (1997)	Effects of an integrated reading and music instructional approach on fifth-grade students' reading achievement, reading attitude, music achievement, and music attitude. (NA)	<b>Effect Size:</b> 0.08 <b>LCI:</b> -0.435 <b>UCI:</b> 0.595 <b>Weight:</b> 1.262 <b>Standard error:</b> 0.263	
Styles (2016)	Rhythm for reading: Evaluation report and executive summary (NA)	<b>Effect Size:</b> 0.03 <b>LCI:</b> -0.127 <b>UCI:</b> 0.187 <b>Weight:</b> 1.635 <b>Standard error:</b> 0.08	
Smith (2010)	The effects of a drama-based language intervention on the development of theory of mind and executive function in Urban Kindergarten Children (NA)	<b>Effect Size:</b> 0.028 <b>LCI:</b> -0.403 <b>UCI:</b> 0.458 <b>Weight:</b> 1.365 <b>Standard error:</b> 0.22	
Byerly (1994)	Generating greater learning gains through dramatization in the classroom (NA)	<b>Effect Size:</b> 0.01 <b>LCI:</b> -0.956 <b>UCI:</b> 0.976 <b>Weight:</b> 0.772 <b>Standard error:</b> 0.493	
Wooderson (1977) 1_2	The effect of musical and non-musical media on word reading. (NA)	<b>Effect Size:</b> 0 <b>LCI:</b> -0.387 <b>UCI:</b> 0.387 <b>Weight:</b> 1.417 <b>Standard error:</b> 0.197	
Standley (1997)	Evaluation of an early intervention music curriculum for enhancing pre-reading writing skills. (Music Therapy Perspectives)	<b>Effect Size:</b> 0 <b>LCI:</b> -0.733 <b>UCI:</b> 0.733 <b>Weight:</b> 1.003 <b>Standard error:</b> 0.374	
Costa-Giomi (2004)	Effects of Three Years of Piano Instruction on Children's Academic Achievement, School Performance and Self-Esteem (Psychology of Music)	<b>Effect Size:</b> 0 <b>LCI:</b> -0.368 <b>UCI:</b> 0.369 <b>Weight:</b> 1.438 <b>Standard error:</b> 0.188	
Wooderson (1977) 1_1	The effect of musical and non-musical media on word reading. (NA)	<b>Effect Size:</b> 0 <b>LCI:</b> -0.4 <b>UCI:</b> 0.4 <b>Weight:</b> 1.401 <b>Standard error:</b> 0.204	

Author	Title	Effect Size	Effect Size (Graph)
Olanoff (1969)	Musical ability utilization program (Final Report No. 2600). Washington, DC: U.S. Department of Health, Education, and Welfare. (NA)	<b>Effect Size:</b> -0.006 <b>LCI:</b> -0.314 <b>UCI:</b> 0.302 <b>Weight:</b> 1.505 <b>Standard error:</b> 0.157	
Mehr (2013)	Two Randomized Trials Provide No Consistent Evidence for Nonmusical Cognitive Benefits of Brief Preschool Music Enrichment (PLoS ONE)	<b>Effect Size:</b> -0.018 <b>LCI:</b> -0.603 <b>UCI:</b> 0.566 <b>Weight:</b> 1.176 <b>Standard error:</b> 0.298	
Yazejian (2009)	Effects of a Preschool Music and Movement Curriculum on Children's Language Skills (NHSA Dialog: A Research-to-Practice Journal for the Early Childhood Field)	<b>Effect Size:</b> -0.041 <b>LCI:</b> -0.338 <b>UCI:</b> 0.256 <b>Weight:</b> 1.516 <b>Standard error:</b> 0.152	
Cogo-Moreira (2013)	Effectiveness of Music Education for the Improvement of Reading Skills and Academic Achievement in Young Poor Readers: A Pragmatic Cluster-Randomized, Controlled Clinical Trial (PLOS ONE)	<b>Effect Size:</b> -0.05 <b>LCI:</b> -0.305 <b>UCI:</b> 0.205 <b>Weight:</b> 1.557 <b>Standard error:</b> 0.13	
Kelley (1981) 1_1	A combined experimental and descriptive study of the effect of music on reading and language. (NA)	<b>Effect Size:</b> -0.051 <b>LCI:</b> -0.656 <b>UCI:</b> 0.555 <b>Weight:</b> 1.151 <b>Standard error:</b> 0.309	
Bowels (2003)	Tune up the mind: The effect of orchestrating music as a reading intervention (NA)	<b>Effect Size:</b> -0.056 <b>LCI:</b> -0.635 <b>UCI:</b> 0.522 <b>Weight:</b> 1.183 <b>Standard error:</b> 0.295	
Kelley (1981) 1_2	A combined experimental and descriptive study of the effect of music on reading and language. (NA)	<b>Effect Size:</b> -0.184 <b>LCI:</b> -0.798 <b>UCI:</b> 0.43 <b>Weight:</b> 1.141 <b>Standard error:</b> 0.313	
Janus (2016)	Effects of short-term music and second-language training on executive control (Journal of Experimental Child Psychology)	<b>Effect Size:</b> -0.225 <b>LCI:</b> -0.746 <b>UCI:</b> 0.296 <b>Weight:</b> 1.254 <b>Standard error:</b> 0.266	
McGee (1981)	Effects of a nonverbal sound-symbol training program on reading achievement. (NA)	<b>Effect Size:</b> -0.228 <b>LCI:</b> -0.676 <b>UCI:</b> 0.221 <b>Weight:</b> 1.343 <b>Standard error:</b> 0.229	

Author	Title	Effect Size	Effect Size (Graph)
Hanson (2003)	Effects of Sequenced Kodaly Literacy-Based Music Instruction on the Spatial Reasoning Skills of Kindergarten Students <i>(Research &amp; Issues in Music Education)</i>	<b>Effect Size:</b> -0.238 <b>LCI:</b> -0.894 <b>UCI:</b> 0.418 <b>Weight:</b> 1.091 <b>Standard error:</b> 0.335	
Register (2004)	The Effects of Live Music Groups Versus an Educational Children's Television Program on the Emergent Literacy of Young Children <i>(Journal of Music Therapy)</i>	<b>Effect Size:</b> -0.254 <b>LCI:</b> -0.863 <b>UCI:</b> 0.354 <b>Weight:</b> 1.147 <b>Standard error:</b> 0.31	
Lu (1986)	The effect of teaching music skills on the development of reading skills among first graders: An experimental study <i>(NA)</i>	<b>Effect Size:</b> -0.258 <b>LCI:</b> -0.675 <b>UCI:</b> 0.159 <b>Weight:</b> 1.381 <b>Standard error:</b> 0.213	
Roden (2012)	Effects of a school-based instrumental music program on verbal and visual memory in primary school children: a longitudinal study <i>(Frontiers in Neuroscience)</i>	<b>Effect Size:</b> -0.384 <b>LCI:</b> -0.956 <b>UCI:</b> 0.188 <b>Weight:</b> 1.191 <b>Standard error:</b> 0.292	
Pappas (1979)	Effect of drama-related activities on reading achievement and attitudes of elementary children. <i>(NA)</i>	<b>Effect Size:</b> -0.489 <b>LCI:</b> -0.791 <b>UCI:</b> -0.188 <b>Weight:</b> 1.511 <b>Standard error:</b> 0.154	
Bennett (1982)	An investigation into the effects of creative experience in drama upon the creativity, self-concept, and achievement of fifth and sixth grade students <i>(NA)</i>	<b>Effect Size:</b> -0.522 <b>LCI:</b> -1.056 <b>UCI:</b> 0.011 <b>Weight:</b> 1.239 <b>Standard error:</b> 0.272	
Degé (2011)	The influence of two years of school music training in secondary school on visual and auditory memory <i>(European Journal of Developmental Psychology)</i>	<b>Effect Size:</b> -0.581 <b>LCI:</b> -1.268 <b>UCI:</b> 0.107 <b>Weight:</b> 1.054 <b>Standard error:</b> 0.351	
Roskam (1979)	Music therapy as an aid for increasing auditory awareness and improving reading skill. <i>(Journal of Music Therapy)</i>	<b>Effect Size:</b> -0.699 <b>LCI:</b> -1.044 <b>UCI:</b> -0.354 <b>Weight:</b> 1.465 <b>Standard error:</b> 0.176	
Gromko (2005)	The Effect of Music Instruction on Phonemic Awareness in Beginning Readers <i>(Journal of Research in Music Education)</i>	<b>Effect Size:</b> -0.775 <b>LCI:</b> -1.182 <b>UCI:</b> -0.369 <b>Weight:</b> 1.394 <b>Standard error:</b> 0.207	

Author	Title	Effect Size	Effect Size (Graph)
Kariuki (2006)	The effects of drama on the performance of at-risk elementary math students (NA)	<b>Effect Size:</b> -1.251 <b>LCI:</b> -2.104 <b>UCI:</b> -0.398 <b>Weight:</b> 0.877 <b>Standard error:</b> 0.435	
Kaplan (2013)	The efficiency of computer-aided instruction and creative drama on academic achievement in teaching of integers to seventh grade students. ( <i>International Journal of Academic Research Part B</i> )	<b>Effect Size:</b> -1.645 <b>LCI:</b> -2.247 <b>UCI:</b> -1.043 <b>Weight:</b> 1.155 <b>Standard error:</b> 0.307	
Bhide (2013)	A Rhythmic Musical Intervention for Poor Readers: A Comparison of Efficacy With a Letter-Based Intervention ( <i>Mind, Brain &amp; Education</i> )	<b>Effect Size:</b> -1.842 <b>LCI:</b> -2.983 <b>UCI:</b> -0.701 <b>Weight:</b> 0.636 <b>Standard error:</b> 0.582	