

Technical Appendix

Definition

Arts participation is defined as involvement in artistic and creative activities, such as dance, drama, music, painting, and sculpture, either as part of the curriculum or as extra-curricular activity. Participation may be organised as regular weekly or monthly activities or more intensive programmes such as summer schools or residential courses. Arts education and participation include a broad range of subjects including the traditional fine arts (for example, visual arts, music, performing arts, theatre, and dance), modern dance and movement, poetry, and creative writing, as well as teaching strategies which explicitly include arts elements, such as drama-based pedagogy. Whilst all of these activities have educational value in themselves, the Toolkit focuses on the benefits of arts participation for core academic attainment.

Search terms: Arts in education; arts/ fine arts/ performing arts participation, arts/fine arts/ performing arts; music education; drama education; dance education.

Evidence Rating

There are five meta-analyses that rely mainly or exclusively on experimental trials. Three have been published in the last ten years. The methodological quality of the meta-analyses also varies and the included studies have only moderate causal inference. On average, these reviews have found academic benefits for arts participation. The pooled effect sizes range widely from 0.03 to 0.77, nearly three quarters of a standard deviation, and are therefore not consistent, although they are all positive.

Overall, the evidence is rated as moderate, reflecting the quality, quantity, and consistency of the meta-analyses included. However, the quality of individual evaluation designs used by studies of arts participation has been criticised in recent reviews as insufficiently robust to enable strong causal inference. If this is the case for many of the studies included in the meta-analyses used here, then the effects may not be as secure as for other 'moderate' strands.

There are some indications of patterns of effect such as higher impact for younger children and for music studies but these are not consistent and vary according to the detail of the approach and the age group targeted.

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Summary of effects

Meta-analyses	Effect size	FSM effect size	
Conard, F., (1992)	0.24	-	Reading
	0.29	-	Maths
	0.77	-	Writing
Lee, B. K., Patall, E. A., Cawthon, S. W., & Steingut, R. R., (2014)	0.43	-	(drama on attainment)
Lewis C.P., (2004)	0.20	-	(performing arts on academic outcomes)
Newman M., Bird K., Tripney J., Kalra N., Kwan I., Bangpan M., & Vigurs C., (2010)	0.06	-	Secondary science
	0.05	-	Secondary English
	0.03	-	Secondary mathematics
	0.45	-	Primary/Early Years cognitive outcomes
Standley, J.M., (2008)	0.32	-	
Single Studies	Effect size	FSM effect size	
Borman, G. D., Goetz, M. E., & Dowling, N. M. (2009)	0.40	-	
Styles, B., Clarkson, R. & Fowler, K. (2014)	0.03	0.11	
Weighted mean	0.15		

The right hand column provides detail on the specific outcome measures or, if in brackets, details of the intervention or control group.

Meta-analyses abstracts

3 Conard, F. (1992)

This study is a meta-analysis of previous experimental studies which examined the effect of creative dramatics on the acquisition of cognitive skills. The areas of research investigated included: the achievement of students experiencing creative dramatic techniques as compared to traditional methods, the impact of study and sample characteristics on outcomes, and the effects of research and methodological features on outcomes. Refined meta-analysis methodology was used that weighted each study independently, thus accounting for varying sizes of groups used in the individual studies. A mean effect size of 0.48 was found for studies in which creative dramatics was used as an instructional technique. Creative dramatics tended to be more effective at the pre-school and elementary level than at the secondary level. Both regular and remedial students appear to benefit from, and enjoy participating in creative dramatics. Studies that used students in private schools produced larger effect sizes than those that used public school students. More detailed documentation of the different types of creative drama treatments is needed. Specifically, studies should include exactly what was done, how it was done, and how the effects were measured. Measurement characteristics, such as, reliability and validity, and other details of the dependent measures were often not reported in the creative dramatics research literature. Detailed reporting of study characteristics facilitates research synthesis. Qualitative reviews were combined with the quantitative analysis. The qualitative data greatly enhanced the results of the meta-analysis, and added further insights in interpreting the findings

6 Lee, B. K., Patall, E. A., Cawthon, S. W., & Steingut, R. R. (2014)

The President's Committee on the Arts and Humanities report heartily supported arts integration. However, the President's Committee called for a better understanding of the dimensions of quality and best practices. One promising arts integration method is drama-based pedagogy (DBP). A comprehensive search of the literature revealed 47 quasi-experimental DBP intervention studies conducted since 1985. The literature showed that designs were generally weak for making causal inferences and that outcomes other than achievement were infrequently studied. A meta-analysis of this research suggested that DBP has a positive, significant impact on achievement outcomes in educational settings. Effects were strongest when the intervention (a) was led by a classroom teacher or researcher rather than a teaching artist, (b) included more than five lessons, and (c) was integrated into English language arts or science curriculum compared to other domains. Positive effects across psychological and social outcomes were found. Implications for policy and practice are discussed.

7 *Lewis C.P. (2004)*

There has been a growing discussion in the fields of education and psychology about the relationship between social skill proficiency and academic excellence. However, the presence of extracurricular involvement as promoting both academic and social development has not been thoroughly explored. The most recent literature syntheses and meta-analyses on extracurricular activity participation were conducted in the 1980s. An updated review and quantitative look at the participation literature is due. The purpose of this study is to integrate participation studies from the 1990s and give summative information as to the impact of extracurricular activity participation on various educational and psycho-social characteristics. Of the 164 identified studies, 41 were included in these meta-analyses. The current analyses produced 6 different activity categories: general extracurricular activity, sports, work and vocational activities, performing arts, pro-social activities, and community-based activities. The current meta-analysis suggests student outcomes were significantly related to general extracurricular activity and pro-social activity participation. General activities and pro-social activities had the most impact on academic achievement, while performing arts and pro-social activities. Participants reported the largest effect on identity and self-esteem related outcomes. Sports and related activities (i.e. Cheerleading) were not as strongly linked to academic achievement indicators as anticipated and student workers had more negative outcomes than any other activity participants. In conclusion, the best outcomes for children and adolescents are brought about through well-built, developmentally appropriate structured activities. Moreover, the academic and social profits of extracurricular activities that have been examined in this study can be used to inform program planning and implementation.

9 *Newman M., Bird K., Tripney J., Kalra N., Kwan I., Bangpan M., & Vigurs C. (2010)*

A set of systematic reviews were undertaken to examine the impact of young people's engagement (in each sector: sport, arts, MLA, heritage) on their learning. This systematic review aims to examine the impact of young people's participation in the arts. A subset of the studies used research designs and outcome measures that allowed for the findings to be translated into a common metric of effect sizes and so meta-analysed. The main aim of the meta-analysis was to combine results (where appropriate) across studies, therefore we have used data that could be translated into a common metric of effect sizes (Hedges' g). Most studies reported multiple learning outcomes; where possible, effect sizes were calculated for all outcomes reported in these studies. When compared to non-participation in structured arts activities: Participation in structured arts activities improves academic attainment in secondary school aged students. Participation in such activities could increase their academic attainment scores by 1% and 2%, on average, above that of non-participants (all other things being equal).

Participation in structured arts activities improves pre-school and primary school aged children's early literacy skills. This result is based on narrative numerical synthesis and thus we are unable to estimate the size of any positive effect.

Participation in structured arts activities improves young people's cognitive abilities (based on various measures of intelligence). Participation of young people in such activities could increase their cognitive abilities test scores by 16% and 19%, on average, above that of non-participants (all other things being equal).

Participation in structured arts activities improves young people's transferable skills. Participation of young people in such activities could increase their transferable skills test scores by 10% and 17%, on average, above that of non-participants (all other things being equal).

13 *Standley, J.M. (2008)*

This meta-analysis of 30 studies using a variety of music interventions to affect reading skills resulted in a moderately strong, significant, overall effect size of $d = .32$. When music activities incorporate specific reading skills matched to the needs of identified children ($d = .44$) or contingent music is used to reinforce reading behaviour ($d = .66$), benefits are large. The music activities that pair alphabet recognition with phonetic patterns, incorporate word segmentation and sound blending skills, and promote rapid decoding skills are effective in enhancing reading instruction and require little transfer to the assessment methodology. Benefits are greater when the special music reading activities are added to an existing music education curriculum than when replacing it. All schedules of intervention are equally effective regardless of whether daily, intense, short-term, or weekly periodic intervention spread across the school year.