

EXECUTIVE SUMMARY

Artists, alongside scientists and entrepreneurs, are role models for innovation in our societies. Not surprisingly, arts education is commonly said to be a means of developing skills considered as critical for innovation: critical and creative thinking, motivation, self-confidence, and ability to communicate and cooperate effectively, but also skills in non-arts academic subjects such as mathematics, science, reading and writing. Does arts education really have a positive impact on the three subsets of skills that we define as “skills for innovation”: technical skills, skills in thinking and creativity, and character (behavioural and social skills)?

The report answers this question by updating and extending to behavioural and social skills the meta-analyses published in 2000 by the “Reviewing Education and the Arts Project” (REAP) directed by Hetland and Winner. Meta-analyses combine existing studies on a specific topic to assess whether a finding is consistent and has enough statistical power to be generalised. In addition to studies already reviewed in the REAP project, this new enquiry involves the systematic investigation of research databases in education and psychology in the following languages: Dutch, English, Finnish, French, German, Italian, Japanese, Korean, Portuguese, Spanish and Swedish.

The kinds of arts education examined include arts classes in school (classes in music, visual arts, theatre, and dance), arts integrated classes (where the arts are taught as a support for an academic subject), and arts study undertaken outside of school (e.g. private, individualised instrumental music lessons; out of school classes in theatre, visual arts, and dance). The report does not deal with education *about* the arts or cultural education, which may be included in all kinds of subjects.

The main results to emerge are summarised below.

Arts education and academic skills in non-arts subjects

Multi-arts education. An extensive body of correlational data in the United States reveals that students who participate in a large number of arts courses (likely a mixture of kinds of arts courses) have higher educational achievement (as measured by grades in school and scores on verbal and mathematical standardised tests) than those who take fewer or no arts courses. One study showed that this relationship exists for students at both the high and low ends of the socio-economic spectrum. These correlational findings should not be taken as showing that the arts courses *cause* the higher educational attainment. Plausible non-causal explanations cannot be ruled out: students who excel academically and who study the arts may come from families who value both academics and the arts, or attend schools that stress both; and good scores or educational ability no doubt have a positive influence on whether students receive arts education, for example because those proficient at school have more time to spend on the activities concerned, or are encouraged more to do so by their teachers or parents. It is notable that a similar study in

the United Kingdom found the reverse: students in the arts track performed less well on their national exams than did those in the academic track – pointing to the importance of considering the kinds of students who self-select into the arts. The handful of multi-arts experimental studies examining the effect of arts classes on educational attainment do not (yet) show a significant causal impact.

Music. Music education strengthens IQ (intelligence quotient), academic performance, word decoding and phonological skills and there is preliminary evidence that music education might facilitate foreign language learning. While there are a number of studies showing a positive impact of music education on visual-spatial reasoning, the sole longitudinal study on this question detected no persistent influence after three years of music, which suggests the need for caution. There is also no evidence that music education has any causal impact on mathematics scores, even though mathematicians may be attracted to music.

Theatre. Strong evidence shows that theatre education in the form of enacting stories in the classroom (classroom drama) strengthens verbal skills, but there is no evidence for a link between theatre training and overall academic skills.

Visual arts. While there is no evidence that training in visual arts improves overall academic skills or verbal skills (literacy), two new correlational studies reveal that students who study the visual arts are stronger in geometrical reasoning than students who do not study the visual arts. However, causality has yet to be established. And one experimental study found that learning to look closely at works of visual art improves skills in observing scientific images – a typical instance of close skills transfer.

Dance. Some studies show that instruction in dance improves visual-spatial skills, but such studies are still too few in number to be conclusive. We found no evidence that dance education improves overall academic skills or reading.

*Arts education and skills in thinking and
creativity*

Everyone associates art with creativity. There are a few studies linking enhanced creativity with theatre and dance education, but the limited number of studies and statistical power of the positive evidence do not allow us to generalise this finding. Research on multi-arts education has not clearly demonstrated a causal impact on student creativity and problem solving.

One possible reason for the weak evidence on this question is the limited way in which creativity has been measured – using "domain-general" tests such as the Torrance Tests of Creativity (in which students must for example come up with original uses for common objects, or title pictures in unusual ways). Another possible reason is that anything can be taught so as to stimulate creativity and imagination, and anything can also be taught in a deadening way. Thus, a science class – indeed, a class in any subject – can teach creativity and imagination if well-taught; and an art class can leave creativity and imagination untouched if poorly taught. Even in art, these skills may well only be developed very deliberately. It is also possible that students who gain expertise in an art form develop creative abilities in that art form but that this new creativity does not spill over into other domains.

We did not find any empirical study assessing the impact of arts education on critical thinking. However, a study showed that visual arts teachers at their best aim to promote reflection and meta-cognition.

*Arts education and social and
behavioural skills*

Arts education is often viewed by public policy-makers and educators as a means of getting students to enjoy school and motivate them for learning in other academic subjects. Empirical studies show that students enrolled in arts education courses display a more ambitious attitude to academic work as well as higher levels of commitment and motivation. However, these studies are correlational and thus do not allow the conclusion that arts education is what motivates students. Possible non-causal explanations exist: for example, students taking the arts may attend schools that are better all around and thus more motivating; or students who self-select into the arts may be more motivated to begin with. Experimental (causal) studies are called for.

Finally, there is no more than tentative evidence regarding the impact of arts education in its various forms on other behavioural and social skills, such as self-confidence, self-concept, skills in communication and cooperation, empathy, perspective taking and the ability to regulate one's emotions by expressing rather than suppressing them. Initial evidence concerned with education in dramatic art appears the most promising, with a few studies revealing that drama classes enhance empathy, perspective taking, and emotional regulation – plausible findings given the nature of such education.

*Conclusions:
art for art's sake?*

In conclusion, we argue that, even though we find some evidence of impact of arts education on different kinds of skills, the main justification for arts education is clearly the acquisition of artistic habits of mind – the current priority objective of arts education in the curricula of OECD countries. By artistic habits of mind, we mean not only the mastery of craft and technique, but also skills such as close observation, envisioning, exploration, persistence, expression, collaboration, and reflection – the skills in thinking and creativity and the social and behavioural skills that are developed in the arts.

There is some suggestive evidence that arts education does matter for innovation because people trained in the arts play a significant role in the innovation process in OECD countries: arts graduates are for example commonly involved in product innovation. Recognising the value of arts education for innovation, an increasing number of universities are developing new types of inter-disciplinary curricula or institutions that try to take advantage of the skills developed in arts education.

If learning in the arts has “collateral benefits” in other areas, so much the better. However, we do not believe that the existence of arts education should be justified in terms of skills in other academic subjects: if one seeks first and foremost to develop skills in geometry, studying geometry – rather than music or dance – is always likely to be more effective. The primary justification of arts education should remain the intrinsic value of the arts and the related skills and important habits of mind that they develop.

Ultimately, the impact of arts education on other non-arts skills and on innovation in the labour market should not be the primary justification for arts education in today's curricula. The arts have been in existence since the earliest humans, are parts of all cultures, and are a major domain of human experience, just like science, technology, mathematics, and humanities. The arts are important in their own rights for education. Students who gain mastery in an art form may discover their life's work or their life's passion. But for all children, the arts allow a different way of understanding than the sciences. Because they are an arena without right and wrong answers, they free students to explore and experiment. They are also a place to introspect and find personal meaning.