

What Are STEAM Proponents Thinking? On Creativity, Excellence, and Measurement

*O que os proponentes do STEAM estão pensando?
Sobre criatividade, excelência e medição*

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Como citar este texto:

WOODFORD, Paul. What Are STEAM Proponents Thinking? On Creativity, Excellence, and Measurement. **Diálogos Sonoros**, v. 1, n. 1, p. 1-15, jan./jun. 2022. Disponível em: <https://periodicos.ufrn.br/dialogossonoros/article/view/28491>.

Submetido em: 23/03/2022.

Aceito em: 01/06/2022.

RESUMO

Educadores de música e de arte se preocupam que a reforma neoliberal da educação tenha tornado seus programas educacionais mais vulneráveis ao declínio de matrículas e à possível eliminação de escolas e universidades. Isto se deve em parte à ligação da educação neoliberal com a economia do conhecimento e com práticas de avaliação baseadas em medições numéricas que relegam as artes e humanidades à periferia da educação. Em resposta a estes desenvolvimentos, alguns professores procuraram fortalecer a percepção do status social e da segurança de seus programas, alinhando-os com o currículo conhecido como STEM, sigla que representa (em inglês) Ciência, Tecnologia, Engenharia e Matemática. Portanto, sugeriram a sigla STEAM, incluindo as Artes. Este documento, entretanto, apresenta um argumento de que as artes no currículo STEAM permanecem apenas secundárias às disciplinas STEM, porque concebidas principalmente como meios de ajudar a melhorar os resultados STEM. Além disso, ao atender ao currículo STEM, esses professores podem estar despojando as artes de muitas de suas competências sociais e comunicativas que, como argumentou o filósofo John Dewey (1934), tornam as artes modos importantes de pensamento e ação política que proporcionam oportunidades para a reconstrução e revitalização da sociedade democrática.

Palavras-chave: STEAM. Democracia. Medição. Criatividade. Neoliberalismo.

ABSTRACT

Music and art educators worry that neoliberal education reform has rendered their educational programs more vulnerable to declining enrolments and possible eventual elimination from schools and universities. This is in part owing to the linkage of neoliberal education with the knowledge economy and associated assessment practices based on numerical measurement that relegate the arts and humanities to the periphery of education. In response to these developments, some teachers have sought to strengthen the perceived social status and security of their programs by aligning them with the STEM curriculum. Hence the acronym STEAM including Arts. This paper, however, presents an argument that the arts in the STEAM curriculum remain only secondary to the STEM subjects because primarily conceived as means of helping to improve STEM outcomes. Moreover, by catering to the STEM curriculum, those teachers may be stripping the arts of many of their social and communicative competences that, as philosopher John Dewey (1934) contended, made the arts important modes of political thought and action that afforded opportunities for the reconstruction and revitalization of democratic society.

Keywords: STEAM. Democracy. Measurement. Creativity. Neoliberalism.

An aged man is but a paltry thing,
A tattered coat upon a stick, unless
Soul clap its hands and sing, and louder sing

For every tatter in its mortal dress,
Nor is there singing school but studying
Monuments of its own magnificence;
And therefore I have sailed the seas and come
To the holy city of Byzantium

Sailing to Byzantium
William Butler Yeats (1933)

1 WHY MUSIC AND ART EDUCATION REALLY MATTER!

There has been a move in recent years to expand the STEM (Science, Technology, Engineering, and Mathematics) subjects to include the arts, hence the acronym STEAM. Many proponents of the STEAM curriculum are justifiably worried about the state of the arts (and arts and humanities) in schools and universities, and perhaps globally, and the STEAM initiative, as originally conceived, is intended to remedy a perceived decline in enrolment in music and art education by linking it to the knowledge economy. The idea was, and in large part remains, that art instruction can improve STEM learning outcomes through the fostering of creativity and a culture of innovation (ALLINA, 2018).

While supportive of some aspects of the STEAM initiative, Aróstegui (2019) and others, and including this author, wish to broaden the school curriculum beyond preparation for the knowledge economy and in ways that place music and the arts at the center of school curricula. Schooling ought to be about much more than just specialist vocational or consumer training. Among perhaps many other things, it should also involve preparation of children and youth for democratic citizenship and all that it entails, including democratic rights and responsibilities but also the development of personal integrity, empathy, independence of thought, and moral judgment and character, all of which are essential to the civic health of the western liberal democracies in a time of democratic deconsolidation (COLWELL, 2019).

The arts, as philosopher John Dewey (b.1859-1952) conceived them, ought to be central to education and to the defense of democracy because “the only media of complete and unhindered communication” between people “in a world of gulfs and walls” (DEWEY, 1934, p. 105). The arts were modes of political thought and action affording opportunities

for the reconstruction and revitalization of democratic society through the exercise of imagination and because also potentially powerful modes of expression and communication. Music and art education had moral, critical, and political potentialities for illuminating and critiquing present problems while also envisioning new societies and possibilities for the greater good. These moral, critical, prophetic, and communicative functions of the arts were regarded by him as essential educational competencies because making it possible for children and youth to achieve some measure of control over their destinies while participating in what he (DEWEY, 1927-1946) idealistically described as the Great Community, its politics and culture.

The terms ‘essential’ and ‘excellence’ as applied by Dewey to art education were thus not about art for art’s sake, the single-minded pursuit of self-interest, the development of transferable skills that might be useful in business or science, or for enlivening science and mathematics instruction. The arts worked to reinvigorate democracy by giving meaning to people’s lives. As Turkish journalist Ece Temelkuran (2019) similarly explains in her book “How to Lose a Country”, if the perils of political populism and democratic fragmentation are to be contained, people need more than the “empty promises” of neoliberal vocational training and consumer choice. “They [...] need meaning, purpose, moral values, and most importantly identity and community” (O’MALLEY, 2019, p. R15).

2 ON CREATIVITY

The STEAM curriculum as presently portrayed in the literature has nothing to do with the fostering of Dewey’s essential moral, critical, prophetic, or communicative competencies through the arts. This is only to be expected given that the stated roles of the arts therein are to enhance STEM learning outcomes and contribute to the recruitment, retention, and training of future engineers, scientists, and mathematicians. The arts play only a secondary role in the STEAM curriculum. Katz-Buonincontro (2018, p. 73) describes STEAM educational goals as “broad, ranging from increasing academic participation, engagement, and retention through art design and thinking (e.g., creativity) [...] to core subject mastery in STEM fields like astronomy and engineering”. As Deresiewicz (2015, p. 31) explains, neoliberal education reformers recognize the need for creativity in schools and universities, but as conceived by them it has little to do with

developing artists or musicians. “No one wants you to become an artist [or musician, or music or art critic, poet, philosopher, or critically engaged citizen]. It’s about devising ‘innovative’ products, services, and techniques—‘solutions,’ which imply that you already know the problem”. Creativity is instead limited to ‘design’ of predetermined products within technocratic market systems that discourage significant change unless warranted by prospects of immediate financial success.

Deresiewicz (2015) attributes a decline of enrolment in the arts and humanities in universities to the neoliberal prioritization of standardization, competition, vocational training, and commercialization over imagination, creativity, and critical thinking, resulting in greater conformity among students and faculty and the weakening of the social bonds that are the bedrock of our democracies. Within today’s universities and schools, as Deresiewicz (2015, p. 27) continues, “it is not the humanities that are under attack. It is learning: learning for its own sake, curiosity for its own sake, ideas for their own sake”. And rather than serving to foster informed and engaged democratic citizens imbued with moral purpose who might question authority as means of holding politicians and public institutions democratically accountable, our universities increasingly serve capitalist interests.

According to Doherty (2016, p. 1), “The university as an institution [now] exists primarily for the growth of financial turnover, for the circulation of money (with no specific purpose beyond itself) and the management of all that governs that circulation”. Today’s universities and schools march to the tune of a capitalist agenda embedded in neoliberal New Public Management systems that enforce compliance to that agenda (CARTER, 2016). Lorenz (2012) describes the managerial and surveillance culture of today’s universities as authoritarian, as faculty are increasingly told not only what and how to teach by their administrators, often at the behest of governments, but also that they must continuously raise their own performance expectations. English state schools may be even worse in that regard, writes Fautley (2019, p. 146), because subject to a “complex of surveillance, monitoring, tracking, coordinating, reporting, recording, targeting, [and] motivating” that stifles creativity and dissent—both of which are the province of the arts and humanities, and that has resulted in the marginalization or elimination of the arts in state schools.

As Dewey (1934, p. 345-346) also said, “the first stirrings of dissatisfaction and the first intimations of a better future are always found in works of art”. The arts were also

essential in education to the creation of an informed and engaged citizenry by helping children and youth “break through the crust of conventionalized and routine consciousness” that would, if left unchallenged, stifle social, economic and political progress (DEWEY, 1927-1946, p. 183). To elaborate on my earlier statement about how Dewey (1934) regarded the arts as powerful modes of expression and communication, the arts were critical tools, and not just for their content, which was sometimes controversial or intended as direct political protest, but also for their efficacy and potency in helping to communicate ideas to the public. In democratic society, Dewey (1927-1946, p. 183) continued, “presentation is fundamentally important [to communication], “and presentation is a question of art”. To paraphrase media guru McLuhan (1964), how information is presented to the public is equally important as what is said. We thus ignore the arts in education at our peril because important to communication but equally so because the weapons of choice of governments or others wishing to manipulate us via our aesthetic sensibilities.

This idea that democratically elected governments as much as corporations and dictators might be in the business of ideological control of the public via the arts (and education in general) might sound paranoid to some, but examples of this abound in the historical record, the study of which is an education unto itself (e.g., see CHOMSKY, 1987; WOODFORD, 2005, 2012, 2019).

It is all too easy to forget that the STEM, and thus also now STEAM, curricula are children of neoliberalism and therefore also extensions of the corporate-capitalist state and its ideological control mechanisms that reduce all education to “nothing more than a preliminary form of adulthood, and the quiet desperation of middle age has been imported backwards into adolescence” (DERESIEWICZ, 2015, p. 28). Today’s children and youth are pressured by government, parents, and education reformers to choose occupations regarded as most financially rewarding rather than developing intellectual purposes of their own or pursuing “the public good or the political and economic interests of all” (WELSH, 2016, p. 276). Success in life has become confused with the accumulation of personal wealth rather than with self-determination in choosing one’s own paths to happiness and personal fulfilment. That desire for self-determination was another of Dewey’s essential educational competencies for any democracy worthy of the name, which is why arts’ teachers should be concerned that the arts’ have only secondary status within the STEAM curriculum.

Philosopher Howard (2012) makes a similar criticism in reminding us of R. S. Peters' seminal papers "Must an Educator Have an Aim" (PETERS, 1959) and "What is an Educational Process" (PETERS, 1967). In the former paper, Peters challenged the proclivity amongst educators, including sadly in the arts, for looking "round for the equivalent of bridges to be built or ports to be steered to" as too narrow and thus illiberal (PETERS, 1967, p. 85 apud Howard, 2012 p. 251). "Anything from music history to engineering physics," Howard (2012, p. 251) continues, "can be taught liberally or illiberally (narrowly), as a matter of critical (and self-critical) perspective or as a matter of doctrine to the exclusion of all else". Properly understood, a liberal education is not something that concludes with a product or immediate goal but is a voyage of self-discovery in a quest for understanding and personal growth resulting in change to which there is no end. To quote Peters (1967, p. 85 apud Howard, 2012, p. 252), "Education is not to have arrived [at the end of any specific journey]; it is to travel with a different view". This is all foreign to the STEM and STEAM curricula, which are essentially amoral, because reduced to vocational training, but not apolitical.

Howard (2012, p. 251) describes education as involving the development of a system of over-arching personal, moral, and other values that give meaning and direction to one's life, including over lifestyle and employment choices, and for which "there are no obvious means to them in the way of a recipe or five-step strategy to creativity," success or happiness, and "notwithstanding the multitude of 'how to' books (and curricula) promising just that". In the neoliberal technocratic educational scheme of things, and thus also the STEM and STEAM curricula, there is no need or desire for the fostering of youth who might question or otherwise challenge capitalism or any other political ideology except perhaps in purely economic terms, and this has undermined the university's and school's mission to educate the masses in the deeper sense of teaching them how to think and act as conscientious and democratic citizens. To extend Deresiewicz's (2015) point about neoliberal education reformers not wanting to create artists, poets, novelists, or musicians etc., few of those reformers are interested in creating or fostering democratic citizenship in children and youth, except perhaps only tangentially.

At risk of being overly redundant, there is no recognition in the STEM and STEAM literatures of the political dimensions of art and education, as all education is conceived as technocratic and politically neutral and thus might just as easily—as already suggested above—serve totalitarian as much as democratic ends. Harvard philosopher West (2004,

p. 39-40) portrays neoliberalism as an authoritarian “drive for [economic] conquest” that subverts democracy. As already suggested but that needs to be stated more explicitly, it “is the deliberate intervention by government to encourage particular types of entrepreneurial, competitive, and commercial behaviour in its citizens with the market as the regulatory mechanism” (CARTER, 2016, p. 33). Within this scheme of things, education is not about fostering politically informed, engaged, and empathic democratic citizens but about creating homo economicus, that is, self—interested economic subjects who allocate “their time and resources between consumption . . . and investment in the self [...] (S)uch an individual is [...] an investor, an innovator, and an entrepreneur” (FLEW, 2010, p. 29 apud CARTER, 2016, p. 33). Moreover, and because the citizenry is regarded as fundamentally lazy and ill-disciplined, it must be “compelled to do so by a directive state to overcome humanity’s (‘unfortunate’) tendency towards collectivism”.

This negative conception of humanity assumes a radical ahistoricism that underwrites neoliberal educational reform by intentionally keeping children and youth in the dark of the long history of social and political activism that eventually gave rise to democracy and to the public institutions and social welfare programs that are today under attack by neoliberals and neoconservatives wishing to privatize them (COMPTON, 2019). This was why Dewey regarded the study of history to be among the essential educational competencies, so children could learn in school the roots of problems but also why those institutions are worth defending (WOODFORD, 2019).

To return to the above theme of the directive state and its institutions, the term ‘the neoliberal manipulated man’ was coined by critics to refer to the neoliberal practice of shaping individuals and society through the fostering of a state of anxiety among the populace by means of “constant crisis discourses,” such as “the need for continual economic [and education] reform,” all of which was intended to render “populations malleable” by normalizing and ritualizing “neoliberalism as ideology, process, and product” as the only “way of being” (CARTER, 2016, p. 33-34).

Given this description and understanding of neoliberalism as overly controlling and demoralizing of teachers and students alike, it is not surprising that educational institutions are experiencing an increase in mental health problems among students. Finnish educator Pasi Sahlberg (2012) describes the neoliberal education reform movement, of which STEAM like it or not is now a part, as “an epidemic that spreads and infects education through a virus” (SAHLBERG, 2012 apud WESTHEIMER, 2015, p. 111),

rendering teachers and students ill because most cannot possibly compete in the race between man and machine as corporations seek “ever more [...] perfect products and services (being) created and re-created at ever faster rates” (GEE; HULL; LANKSHEAR, 1996, p. 27). Nor should it come as a surprise that many of today’s students are thought to lack resilience. This, too, is to be expected since so much of neoliberal education reform is based on a deficit model and discourse of economic and educational crises that presume “that young people are the passive objects of economic forces. They have no agency, no options” (DERESIEWICZ, 2015, p. 32).

Fautley (2019, p. 141) recently described the goal of neoliberal education reform as ultimately to render teachers and students compliant and accountable to market forces in part through the weaponization of evaluation which is increasingly conceived by our democratically elected governments as “ [...] a stick with which to beat schools, teachers, and education academics”. “Neoliberalism privileges measurement”, Fautley (2019) continues, but it privileges certain kinds of measurement over others, at the expense not just of music and arts programs but also “[...] aspects of social, emotional or moral development that have no immediate measurable [numerical] performance value” (FAUTLEY, 2019, p. 142). Within educational institutions, routinization of a punitive accountancy prevails as part of a tenacious and misguided “corporatized politics of ‘evidence’ of performance gaps” that substitutes numerical measurement for assessments of intelligence, creativity, and insight and that is “used to redeploy resources away” from programs regarded as underperforming or as less amendable to quantitative measurement (WHITAKER, 2019, p. 7).

3 THE ARTS TEACHERS’ DILEMMA

Herein lies the root of the immediate dilemma of music and art teachers, which is that they feel compelled to justify themselves, their programs, and students as “calculable rather than memorable” (BALL, 2012, p. 32 apud FAUTLEY, 2019, p. 142) by aligning their programs with the STEM and STEAM curricula. Those teachers are in a sense fighting for the survival of their subjects and programs in education systems in which excellence and success are measured and defined in narrowly numeric and economic terms that are mistakenly regarded as ends unto themselves rather than as only means to some ends.

Thankfully, there is a growing body of literature that challenges the neoliberal obsessions with metrics and associated rating and ranking of institutions, programs, and individuals as the sole measures of educational excellence because couched in the language of ‘hard-nosed objectivity’ rather than also of human subjectivity, and thus ill-suited to the task of assessing qualitative experience, and because deflecting “teaching from engaging students to examining them” (MINTZBERG, 2015, p. 5). Numerical measurement is only a partial truth that many students and teachers find degrading as curricular attention is deflected “away from aspects of social, emotional, or moral development”—and judgement—to fulfilling externally mandated and “measurable performance outcomes” favouring the STEM subjects above all else (FAUTLEY, 2019, p. 142).

Canadian business scholar Henry Mintzberg (2015, p. 5) challenges the neoliberal “cult of obsessive measurement” and “managing by numbers alone” that he contends “has done enormous damage” to business and society, “undermining the souls of so many of our institutions,” including educational ones. Learning is simply too complex to be understood in terms of numbers alone. Sooner or later, Mintzberg continues in his advice to corporate managers, they are going to have to acquire direct knowledge of their businesses through personal observation so they can exercise better judgement than is possible with numbers alone.

Perception and judgement are additional Deweyan essential educational competencies because almost synonymous with critical thought and the formation of personal and social values and goals. In this age of distraction and post-truth, children and youth need to learn how pay careful attention to existing conditions in their world—which is, as readers may recall, one of the political functions and essential educational competencies of the arts—and far beyond the school and university, so less subject to what novelist Bellow (2015, p. 331) described as “the tyranny of perceptions—the victorious opinions hanging over us like a smog from which no relief can be expected”. We hear much from arts educators about how the arts promote creativity and critical thinking, which is not always case, since those subjects are as prone as any others to the usual human problems of social conventionality and conformity, but one tends not to hear as much about perception and judgement, both of which are as central—or ought to be—to musical, artistic and other forms of inquiry because virtually synonymous with thinking. As Dewey conceived it, thinking in the deeper sense of the term of being

intellectual involves perception of relationships as individuals separate the relevant from the irrelevant, truth from propaganda and deceit.

The salient point here, and by way of approaching my conclusion, is that perception and judgement are not exclusive to any one subject, any more than is intelligence. “Any subject, topic, question, is intellectual,” Dewey (1933, p. 618) wrote in “How We Think”, “not per se but because of the part it is made to play in directing thought in the life of any particular person” or society. In “Art As Experience” (DEWEY, 1934), he described as absurd the notion that scientists are more intellectual and penetrating in their thinking than are musicians and artists:

To think effectively in terms of relations of qualities [such as are experienced in the arts] is as severe a demand upon what is thought as to think in terms of symbols, verbal and mathematical. Indeed, since words are easily manipulated in mechanical ways, the production of a work of genuine art probably demands more intelligence than does most of the thinking that goes on among those who pride themselves as being ‘intellectuals’ (DEWEY, 1934, p. 45-46).

Da Vinci certainly regarded the arts as equally important to society as the sciences, as must have Pythagoras and legions of other scientists throughout the scientific revolution and continuing to the present. As Crosby (1997, p. 159) notes in *The Measure of Reality: Quantification and Western Society 1250-1600*, music was “close to the center during the scientific revolution of the late sixteenth and seventeenth centuries—Galileo, Descartes, Kepler, and Huyghens were all trained musicians who wrote on musical subjects, sometimes extensively”. Much later, during the early Cold War, music and music education were also very important, at least at first, to the American government as it attempted to demonstrate to the world that country’s military, economic, and cultural superiority (WOODFORD, 2010, 2012). Arts education in those years was regarded by governments as equally important to the health and other needs of nations as were science and mathematics education. It was only as the neoliberal cult of obsessive measurement and specialist educational training began to take hold over educational politics in the mid- to late 1980s that government interest in arts education, and the arts in general, began to wane (WOODFORD, 2019).

My own preference with respect to curriculum is that, rather than further labelling and compartmentalizing subjects or small groups of subjects on the presumption of

superiority, the school be organized along the lines of what art educator Eisner (1987) described as the celebration of thinking, human spirit, and agency across the broader curriculum, thereby also contributing to the health of our democracies beyond economics by allowing for greater curricular breath, individual choice, and critical awareness of the ubiquity and many meanings of the arts in students' lives. This proposal is radically opposed to the present neoliberal model based on vocational training and the cult of measurement according to which children are expected to follow more narrow curricula in relative isolation and under duress.

My immediate concern is that proponents of the STEAM curriculum appear to be conceiving of the value of music and arts education too simplistically, in terms of music or art making in a social and political vacuum and thus perpetuate the notions that those subjects are simply entertainment or opportunities for developing transferable skills rather than as complex modes of thought and action and bodies of literature that, as with the STEM subjects, can have dire consequences for society and the world. Having survived the Holocaust, Jewish-German Philosopher Theodor Adorno (1997) knew full well the dangers of educating children and youth in any class or subject, including the arts and sciences, in a moral and political vacuum lest they breed a passive citizenry or highly skilled moral monsters. In his famous 1967 essay "Education after Auschwitz," Adorno admonished teachers of all subjects and levels of skills and knowledge that the primary purpose of all education ought to be the prevention of a future Auschwitz. One of the many dangers of today's teachers treating all or any subjects as somehow neutral and thus apolitical and amoral is complicity in the neoliberal agenda for education by failing to prepare children and youth as thoughtful, imaginative, caring, and conscientious citizens who can participate intelligently and as moral agents in the world's politics and so contribute, to reiterate Dewey's (1927-1946) call, to the shaping of a more humane society. As Deresiewicz (2015, p. 31) concluded in his own essay "The Neoliberal Arts," "if there was ever a time that we needed young people to imagine a different world, that time is now".

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