Revista Paraguaya de Educación a Distancia, FACEN-UNA, Vol. 4 (1) – 2023, pp. 23-30

Artículo Original

Futures possibilities for education in the face of global challenges: regenerative design as a driver for change

Futuras posibilidades para la educación frente a los desafíos globales: el diseño regenerativo como impulsor del cambio

Stephen Murgatroyd
Futures Leadership for Change Inc., Canadá
https://orcid.org/0000-0002-2696-8779
E-mail: murgatroydstephen@gmail.com

Abstract

Anticipatory studies suggest that our current school system is no longer fit for purpose. Not only is it failing in its human capital mission, but it is also failing in its core mission of enabling active and engaged citizenship. It is time for a major rethink. This paper suggest a framework for such a rethink – regenerative design for sustainable development. The underlying idea of this approach are outlined together with eight principles which should inform this work.

Keywords: Anticipatory science, futures thinking, regenerative design, sustainable development, technology enabled learning.

Resumen

Los estudios anticipatorios sugieren que nuestro actual sistema escolar ya no es adecuado para su propósito. No sólo está fracasando en su misión de capital humano, sino también en su misión fundamental de hacer posible una ciudadanía activa y comprometida. Ha llegado el momento de replantearlo. Este documento propone un marco para dicho replanteamiento: el diseño regenerativo para el desarrollo sostenible. La idea subyacente de este enfoque se esboza junto con ocho principios que deberían informar este trabajo.

Palabras clave: Ciencia anticipatoria, pensamiento prospectivo, diseño regenerativo, desarrollo sostenible, aprendizaje posibilitado por la tecnología.

Climate change impacts many regions of the world through extreme weather events such as hurricanes, floods, and drought. Globally, seven in ten citizens expect severe impacts to affect their countries within the next decade[1]. Over half of the adults surveyed by the World Economic Forum indicate that climate change has already had a severe impact on their daily lives[2].

Wars and their consequences are currently impacting twenty-seven regions of the world, including Europe, Africa, Asia, and Latin America. Wars create refugees – there are app. 30 million now with an additional 70 million displaced from their homes. Turkey is home to close to 4 million refugees, not all of whom are able to receive the education to which they are entitled.

Poverty affects app 10% of the world population – 700 million people[3]. Even in highly developed countries like the US, one in six children lives in poverty (11.9 million people). In Canada, 6.4% of the population (many indigenous, single parents or recent immigrants) live in poverty. Poverty has a direct impact of educational outcomes – while teachers can do wonderful things, they are not equipped or resources to overcome historical and racially based poverty and its impacts on learning (Berliner, 2004).

Recibido: 05/10/2022 *Aceptado: 29/12/2022*

Three hundred million children around the world are unable or cannot attend primary school[4]. Only one in three ten-year-olds can read and understand a simple story[5]. Adult literacy is also a challenge. In the US, 21% of US adults do not achieve levels of literacy commensurate with their age and education. 66% of 4th-grade children in the US cannot read proficiently, and many will fail in adulthood[6]. There is a strong link between literacy levels, crime, and unemployment (Shinabarger, 2017).

The world is challenged, volatile, uncertain, ambiguous, and complex and is becoming more so each year. To further complicate things, developed economies are experienced three additional challenges. First, their demography suggests that the rapidly ageing populations will not only change the labour market but also bring new challenges for social support and health, which will be expensive. At the same time as immigration in these countries needs to increase to provide needed labour, taxation needs also to increase to pay for additional services. Canada, for example, has a fertility rate of just 1.4 live births/fertile woman and is set to join the "really low birth rate" group of nations – South Korea, Singapore, Spain, Italy and eleven other countries. For Canada, a fertility rate of 2.1 would mean that the country's birth rate enabled replacement without immigration. Canada has been below replacement since 1971. One impact of these demographic factors is a global shortage of skilled labour and an ongoing "war" for talent, with world-wide skilled labour shortages now at a sixteen-year high (Manpower Group, 2022).

Second, the ability of developed economies to engage citizens and provide good government is declining. The Edelman Trust Barometer[7], which has been collecting relevant data for over twenty-two years, suggests that trust in governments in the twenty-eight countries surveyed is at an all-time low. Almost half of all respondents see government and the media as divisive societal forces. Linked to this is the rise of populism and right-wing governments in Africa, Asia, Europe, North America and Latin America and the growing violence and hate-speech associated with political discourse.

Third, global economies are fuelled by debt. The Global Debt Monitor shows that government indebtedness is now at an all-time high of US$305 trillion, with the debt: GDP ratio (a key measure of financial stability) now at 352% (45% - 60% is seen as a manageable debt: GDP ratio)[8]. Only Australia, Indonesia, Mexico, Netherlands, Russia, Saudi Arabia, Switzerland and Turkey have a debt: GDP ratio under 65% amongst the G20 nations[9]. To make this worse, government unfunded pension liabilities could reach US$400 trillion by 2050 unless remedial action is taken[10].

The world is in deep trouble and the future is increasingly risk-laden and ambiguous. The coming generations will face complex and wicked problems which will require creative, radical, and meaningful solutions. The world is running out of space to "kick the ball further down the playing field" for someone else to deal with. The next three generations will have to deal with the existential threats to our species.

Our educational endeavours are mission-critical for all. The generation in school now and those that will follow in the next three decades will determine the planet's future and the place of humans on it.

Given this, one might expect a serious conversation to be taking place about the future-focused work schools, colleges and universities need to do. But as Jón Torfi Jónasson has observed, education is not seriously engaged in rigorous futures-analysis and related system change, unlike other sectors of society (Jónasson, 2016). Murgatroyd (2022) argued that, in the case of higher education, colleges and universities are "permanently failing" institutions using the analytic framework provided by Meyer and Zucker (1989) and later refined by Rouleau et al (2008): they are not agile and nimble in their response to the kind of issues just outlined.

In this paper this same argument is extended to K-12 education. Are schools and the work that they do preparing and enabling the next generations to overcome these challenges or are they contributing to deepening the complexities of response?

Futures Thinking – The Science of Anticipation

Before looking specifically at a response to the challenge of enabling the next three generations of learners to lead the world out of its current set of inter-connected "wicked" problems, it is important to understand the analytic framework in which those engaged in futures thinking work. The task is not to predict the future but to anticipate possible, probable, improbable, and preferred futures. That is, the work of futures analysis is about evidence-based analysis aimed at anticipating various futures and then using strategic thinking and planning to shape the preferred future for a school, community, nation or organization.

By analyzing trends, patterns, and interactions between social and economic forces and gathering evidence from systematic studies, futures thinkers explore "the direction of travel" – where a phenomenon or feature may be headed. As an example, the question we might ask about the work of school leaders is "if we engage in a specific intervention in education, what are the intended and unintended consequences, and when will these consequences occur?" We may also ask the extent to which any intervention is accompanied by a risk-consequence analysis.

Risk analysis is noticeably absent in many attempts to advocate for change or innovation in our schools (Zhao, 2013). Yet in other sectors, risk analysis is at the heart of change management practices. It involves understanding both what we know, and what we don't know and exploring the unknown unknowns, as the table below, derived from the work of Denise Rousseau (2020), makes clear.

Table 1. Exploring the unknown unknowns

Processes	**Routine**	**Non-Routine**	**Novel**
Uncertainty	Known Knowns *Technical Rationality - The information is to hand*	Known Unknowns *Missing Information -Can be Found and Analyzed*	Unknown Unknowns *Historical information is non-existent – evidence will only be revealed through trial and error*
Key Actions	● Understand how work is currently done ● Identify key practices and the evidence for their efficacy ● Build protocols, action pathways and evaluate	● Diagnose the problem to be solved ● Address politics and stakeholders ● Search for and generate alternatives ● Evaluate options ● Develop, plan, execute, evaluate	● Develop scenarios ● Use "a variety of approaches to explore options ● Use scenarios to develop pilots and evaluate ● Use an action-learning cycle to continuously adapt as understanding emerges
Success Themes	Agile Not Rigid – No Good Evidence, Only the Best Evidence at the Time	Positive Response Patterns: Reflect – Act – Reflect – Refine - Act	Experiment – Improvise – Learn - Change

Fuente: Denise Rousseau (2020)

Using strategic foresight and anticipation helps organizations to avoid certain pitfalls, such as:

a. Solving the wrong problem – idea-led not problem-driven
b. Ignoring the politics which affect the process of decision-making – letting pet projects and sponsor bias get in the way
c. Considering just one option – narrowing choice and using a hunch (aka "guess") rather than evidence
d. Focusing on a single outcome and thereby narrowing the definition of "success"
e. Letting narrow interests dominate – ignoring key stakeholders
f. Relying only on easily available information – stories are better than data

When we explore the history of educational change and development we can see that several developments – vouchers, Charter Schools, teacher assessment – are examples of one or more of these six pitfalls.

The "Problem" Of Schooling – Trying to Fix The Wong Problem

When politicians and educational leaders seek to change education, what is the problem they think they have to solve?
For some, they see the system as "broken" and in need of "root and branch" change. Generally, this is a neo-liberal view and the changes they seek to implement involve:

- **Privatization** – more parental choice of where to send their children to school and what they learn when they get there (Abrams, 2016)
- **Competition** – creating a competitive market for schooling based on the idea that competition breeds excellence and fosters innovation.
- **Frequent testing** – so that choice decisions can be made on the basis of "league tables" and data rather than just brand names and positioning.
- **Accountability** – using test data to drive highly regulated processes and government oversight.
- **Deployment of Technology Enabled Learning** – with the intention of lowering the unit cost of teaching and improving outcomes through "anytime, anywhere" learning.
- **De-professionalization** – seeking to reduce the power and influence of organized unions and associations of teachers and reducing the barriers to entry into the profession.
- **Human capital focused** – driving curriculum by the current and perceived medium-term future needs of the economy rather than seeing education as a cultural grounding for citizenship.

Murgatroyd and Sahlberg (2016) suggest that these features form the basis of a global education reform movement (GERM) which has as its sponsor organizations like the World Bank, the World Economic Forum and the OECD (Walker and Sahlberg, 2021). Their aim is to "improve" educational outcomes as measured by the speed at which graduating students enter the labour market and the size of their subsequent earnings.

The unintended consequences of GERM have been a gradual decline in learning for a great many people and a focus of resources on the already wealthy and successful. Indeed, as was clear to all during the pandemic, the poor and underprivileged had systematically less access to teaching and learning and appropriate technologies when compared to the middle-

class and very wealthy. Schools have, since their very beginning, failed certain classes of people and continue to do so. GERM is an example of a policy suite trying to fix the wrong problem.

This can be seen most clearly when we look at the curriculum. The preoccupation in many jurisdictions with science, technology, engineering, and mathematics (STEM) – seen by many as the core of our technology-enabled future – to the detriment of arts, social studies, language arts and social and emotional learning – is warping education. In Canada, for example, the push to get more students into STEM and into diploma and degree programs is impacting our ability to recruit students into key trades like electricians, carpenters, and plumbers (Usher, 2022) – all jobs that, over time, pay as well if not better than many STEM jobs. To make matters worse, Canada currently has over 1 million job vacancies it is unable to fill with individuals with appropriate skill sets.

Then there are the ideologically driven curriculum reforms, which involve book banning, outlawing certain topics for social studies, requiring teachers to teach non-science (e.g., creationism) as part of science. These reforms seek to shape the understanding of the world and their part in it for generations of students.

The education system is failing to achieve its own human capital objectives and has always done so – just not at this scale of failure.

The Real Problem – The Absence of Regenerative Thinking and Learning

Given the challenges outlined earlier in this paper, preparing students for jobs that do not exist and demanding high performance on standardized tests which do not measure the ability to learn, engage and have an impact may not be the problem to focus on. Rather, we need to focus our resources on equipping all in our society with the skills they need to have deep and meaningful social, economic and environmental impact.

A framework for this exists. It is called regenerative design for sustainable development. Developed by John Tillman Lyle (1996), using work on systems theory and design and eco-systems understanding, the basic idea is to consciously design communities and systems to strengthen the ecosystem and our interconnectedness as people. Rather than promote competition, education should demonstrate the power of collaboration and co-operation. Rather than using standardized tests to measure educational achievement, we should use project-based impact evaluation of student work in the community to assess where they are on their life-long learning journey. Rather than focus on STEM, students should be encouraged to identify their passions and skills and the school system should nurture them so that they can be the best they can be.

Describing this approach, Warden (2021) describes the regenerative mind-set as developed by the Royal Society of Arts (RSA) in these terms:

> A ‘regenerative’ mindset is one that sees the world as built around reciprocal and co-evolutionary relationships, where humans, other living beings and ecosystems rely on one another for health, and shape (and are shaped by) their connections with one another. It recognizes that addressing the interconnected social and environmental challenges we face is dependent on rebalancing and restoring these relationships.

Cole (2010), writing a manifesto for the deployment of regenerative thinking, suggests these key features:

- Seeing the responsibility of design as “designing the ‘capability’ of the constructed world to support the positive coevolution of human and natural systems” versus designing “things” (buildings, technologies, infrastructure, etc.) and defining

sustainable buildings or developments as "buildings or designs that can support sustainable patterns of living."
- Emphasizing the "role of positively supporting human and natural *processes"* versus "buildings or technologies as *product.*"
- Seeing development and change as within and connected to a larger system – place, shifts "the current emphasis of greater energy self-reliance at the individual level" to "opportunities for positive connections and creative synergies with adjacent families and people and surrounding natural systems."

Imagining schooling from this mindset, Hall (2021) points to the need to reimagine not just what is taught and what it is we expect students to learn, but how they learn. We need a new pedagogy for new challenges for a post-pandemic era. He concludes that "Governments need to engage in a radical overhaul of the purpose, philosophy and methodology of a stagnant system.".

Founded on a bedrock of literacy, numeracy and social and emotional learning, students should be able to pursue a variety of pathways to learning which reflects their passions and commitments. These pathways need to include a focus on:

- Climate, science, and social justice.
- Equity, inequality, and inclusion.
- Cultures, race and the need for trust and respect.
- The importance of art, drama, literature, media in shaping our thinking and experience.
- Collaboration, co-operation and engagement as skill-sets.
- Project management for impact.
- Change management and leadership.

Teaching through traditional subjects may no longer be the key to unlocking the potential and possibilities of our young people: we need to do so if we are to achieve real impact through learning. A shift to students working collaboratively at all ages on wicked problems is more likely to produce positive results (Murgatroyd, 2010).

Technology Enabled Learning and Regenerative Thinking

At this time, technology is enabling some students and their teachers to develop regenerative thinking capabilities and skills. Access to free to use open education resources, massive open online courses (MOOCs), social media and micro-learning are enabling innovative teachers and learners to shift their focus from accountability-based learning to learning linked to social change. Sites like letsgozero.org and the plan for every school in the world to have climate actions by 2025 (Kwauk and Winthrop, 2021)

The principles underlying this work and related work on using creative arts and other project-based learning to impact key issues like homelessness, racism and inequality are now well established:

1. **Start with the local place and context** – while the issues may be global, they impact specific communities in different ways. Use evidence, the voices of elders and local data to support project-based learning and social-action.

2. **Seek out different perspectives** – there are a variety of "versions" of the challenge and a range of options. Help students learn to weight evidence and make strategic action choices.
3. **Continuously build capabilities and competence** and ground these in a solid understanding of the knowledge domains.
4. **See and celebrate the complexity of a challenge** – rather than simplify, expand the students understanding of the nested nature of social and environmental challenges and encourage them to develop system thinking and design skills.
5. **Design for a circular economy** – assess the impact of what students are doing not just on their community but on the eco-system and make sure that they reuse, recycle or create opportunities to "give back" to nature.
6. **Create space for risk-taking and innovation** – students learn just as much (if not more) from failure than they do from a successful project. Let them fail and support their learning.
7. **Work on the inside and outside** – help students learn to reflect, analyze, peer review and understand their emotions. Use every activity as a way of building social and emotional intelligence.
8. **Always work from a position of a hopeful vision of the future.** Gloom and doom is not a starting point for engagement and action – encourage every student to see possibilities in their future and all of ours.

Technologies are available to help with each of these "pillars" of regenerative thinking. Rather than seeing technology as replacing teachers, if used to support these pillars, it can provide enriching connections, opportunities to collaborate and new ways for students to showcase their pioneering and groundbreaking work.

CONCLUSION

The idea that schools can go back "to business as usual" in the post-pandemic era is erroneous. They have always been permanently failing institutions in terms of their social purpose. It is time to embrace what Biesta (2013) calls the "beautiful risk of education" and see our schools as engines for all of our futures.

REFERENCES

Berliner, D. (2004). These Youth Deserve Better. *The Arizona Republic*. Available at https://nepc.colorado.edu/publication/these-youths-deserve-better

Biesta, G. J. (2013). *The Beautiful Risk of Education*. Boulder, CO: Paradigm Publishers.

Cole, R. (2010). Building Human Agency - A Timely Manifesto. Building Research and Information, Volume 38(3), pages 389-350.

Hall, J. (2021). Post-Industrial Schooling. *RSA Journal*, 2021 Issue 4, pages 38-40.

Jónasson , J. T. (2016). Education Change, Inertia and Potential Futures. *European Journal of Futures Research*, Volume 4. Available at https://eujournalfuturesresearch.springeropen.com/articles/10.1007/s40309-016-0087-z

Kwauk, C., & Winthrop, R. (2021). Unleashing the Creativity of Teachers and Students To Combat Climate Change – An Opportunity for Global Leadership. Washington, DC: Brookings Institute, March 26th available at https://www.brookings.edu/research/unleashing-the-creativity-of-teachers-and-students-to-combat-climate-change-an-opportunity-for-global-leadership/

Lyle, J. T. (1996). *Regenerative Design for Sustainable Development*. New York: John Wiley & Sons.

Manpower Group (2022). Employment Outlook Survey. Wisconsin: Manpower Group. Available at https://go.manpowergroup.com/hubfs/MEOS/2022_Q4/Global_EN_MEOS_Report_4Q22.pdf

Meyer, M., & Zucker, L. (1989). *Permanently Failing Organizations*. Newbury Park, CA: Sage.

Murgatroyd, S. (2021). Wicked Problems and the Work of the School. *European Journal of Education*, Volume 45(2), pages 259 – 279.

Murgatroyd, S. (2022). "Reinventing" Higher Education – Rhetoric versus Reality in a Post-Pandemic World. *Revista Paraguaya de Educación a Distancia, FACEN-UNA,* Vol. 3 (2), pages 48-57.

Murgatroyd, S., & Sahlberg, P. (2016). Two Solitudes of Educational Policy. *Journal of Learning for Development*, Volume 3(3), pages 9-21.

Rouleau, L., Gagnon, S., & Clouter, C. (2008). Revisiting Permanently-failing Organizations — A Practice Perspective, *Les Cahiers de Recherche du GePS* 2(1), pages 17–29.

Rousseau, D. M. (2020). Making Evidence-Based Organizational Decisions in an Uncertain World. Organizational *Dynamics*. Vol. 49 9 (pp 1-12). Available at https://cebma.org/wp-content/uploads/Rousseau-2018-Organizational-Dynamics-Evidence-Based-Decisions.pdf (accessed August 16th 2022).

Shinabarger, N. (2017). "Literacy and Criminality," The Idea of an Essay: Vol. 4 , Article 29. Available at: https://digitalcommons.cedarville.edu/idea_of_an_essay/vol4/iss1/29

Usher, A. (2022). Fun with Apprenticeship Registration Data. *One Thought Blog*, September 26th 2022. Available at https://higheredstrategy.com/fun-with-apprenticeship-registration-data/

Walker, T. D., & Sahlberg, P. (2021). *In Teachers we Trust – The Finnish Way to World Class Schools*. New Jersey: W W Norton.

Warden, J. (2021). What is Regenerative Thinking? *The RSA Journal* 2021, issue 4, pages 27-31.

Zhao, Y. (2013). What Works May Hurt – Side Effects in Education. *Journal of Educational Change*, Volume 14(3), pages 1-19 available at http://zhaolearning.com/wp-content/uploads/2017/02/SideEffectsPublished.pdf

End Notes

[1] Source: https://www.weforum.org/agenda/2022/09/climate-change-severe-impacts-lives/
[2] ibid
[3] See https://www.un.org/sustainabledevelopment/poverty/
[4] Source: https://www.nytimes.com/2020/03/04/world/coronavirus-schools-closed.html
[5] Source: https://www.unicef.org/press-releases/unicef-warns-shockingly-low-levels-learning-only-third-10-year-olds-globally
[6] Source: https://www.thinkimpact.com/literacy-statistics/#:~:text=The%20literacy%20rate%20for%20adults%20across%20the%20U.S.%20averages%2088%25
[7] See https://www.edelman.com/trust/2022-trust-barometer
[8] Source: https://www.iif.com/Key-Topics/Debt/Monitors#:~:text=Global%20Debt%20Monitor%3A%20Debt%20in%20the%20Time%20of%20Geopolitics&text=Total%20global%20debt%20rose%20by,to%20China%20and%20the%20U.S.
[9] Source: https://tradingeconomics.com/country-list/government-debt-to-gdp?continent=g20
[10] Source: https://www.visualcapitalist.com/pension-time-bomb-400-trillion-2050/