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It's Short-Sighted

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Increasingly, educators are challenged by perceptions of the future. It is partly due to the rapid pace of change that forces us to realise the future rapidly telescopes, collapsing into today. Futurists amalgamate predictions. Some vision based on scientific methods that usually predict within known error ranges, or make quantitative projections using tools such as trend analysis, or measures of change of both beliefs and opinions with associated and assessed probabilities—developed from social survey analysis. Others analyse qualitative perceptions and expressions gathered either from individuals by interview, or groups using either focus group sessions, questionnaires or surveys.

> *An explosion in … myopia, most alarmingly … for Chinese 10-20% to 80-90% in 60 years and also doubling to 50% of young adults in both Europe and the US*

Shared observation however informs that science, technological innovation and development has rapidly introduced: new products, and processes—affecting life style, industrial production and employment; created new research capabilities (Smith, n.d.)—in molecular biology, medical sciences, extreme land and deep ocean environments, space, and nanotechnologies; increasing cross-disciplinary integration and advances; and an immediacy of communication transformative of politics (Hague, 2016), business (Pirouz, 2012; Corb, Manyika, Chui, de Muller, & Said, 2011), media, entertainment and social interaction.

Education by comparison has been conservative and slow to embrace the opportunities of new technologies. Is education short-sighted then in its approach? Not intentionally, but its ultimate goal of both long and fulfilling lives for students is obfuscated by social pressures derived from changing values.

Community assessment of the impact of technologies and their acceptance as advantageous for utilitarian, emancipative or creative purposes has delayed integration of new technologies into educational practice. Scepticism of the impact on valued capacities—mental calculation, capacity for immediate recall, social skills for personal interaction, extended attention spans—has further inhibited development of pedagogies to replace traditional methods of learning. It's an attempt to be looking long into the future that has maintained a conservatism to retain "what is not broken." The changing needs of the new economy of the future is however impacting curriculum even if still slowly. STEM adoption and implementation is happening but seems reluctant.

This conservatism seems to derive from an overarching goal of optimising success, pervasively defined as a status based on monetary outcomes which have been linked to achievement of higher incomes through pursuit of the more profitable professions, usually requiring higher educational achievement, at least at entry levels. This pursuit of academic achievement has shaped the curriculum offered within schools in ways that are now being found to be disadvantageous. Symptoms include wide spread disengagement with schooling, lower indices of achievement in global comparisons, and ultimately the increasing length of time before gaining employment or the continuing unemployment of graduates, in some professions specifically. Launching increased numbers of students into university degree course has resulted in "big debts and broken dreams" (Thompson, cited in Knott, 2016). Questions about both the nature of work and engagement in work have arisen. Will it be part or full-time, relational rather than materially productive? What will society require to receive a living wage—employment? Yet there are already evident social consequences, but even simpler failings. One example of short-sightedness, from recent research, can illustrate this claim.

An explosion in the number of children developing myopia, most alarmingly across East Asia (for Chinese 10-20% to 80-90% in 60 years), and also doubling to 50% of young adults in both Europe and the US, has prompted broad research into potential causes. "We are going down the path of having a myopia epidemic", says Padmaja Sankaridurg head of the myopia programme at Brien Holden Vision Institute in Sydney, Australia" (cited in Dolgin, 2015, p. 276). It is during the growth period of childhood and adolescence that myopia is diagnosed, and it is due to a slight but abnormal elongation of the eyeball. The defective outcome is an image focussed in front of the retina resulting in the sensation of a blurred image.

Dolgin (2015) shares that causation was first linked (1962) to a genetic origin, due to observing a higher frequency of myopia amongst identical (homozygous – same gene) twins than other (heterozygous) twins, but later (1969) work comparing Inuit grandparents who lived in isolated Alaskan wilderness environments with their children and

grandchildren, indicated a change in the incidence of myopia from about 2% to 50% discrediting genes or gene change (which is slow) as the main mechanism for a rapid increase in occurrence. Identifying exposure to outdoor sunlight as the strongest factor influencing development of myopia (rather than closeness of work or other factors) is unexpected.

Australian research (Morgan, cited in Dolgin, p. 278) "estimates that children need to spend around three hours per day under light levels of at least 10,000 lux [similar to under the shade of a tree] to be protected against myopia" and (Rose, cited in Dolgin, p. 278) asserts that additional outdoor time "has to be mandated through the schools, because getting parents to voluntarily do this is extremely difficult" (para. 23). Support for this assertion derives from interventions in Singapore (Saw, cited in Dolgin, p. 278) which established that even a nine month program involving parents in planned family outdoor activities, with equipment provided and even cash inducements, resulted in no higher outdoor time for their children than for children in an unsupported control group. This is further substantiated by a recent study (Donnelly, 2016) that indicates student fitness gains in UK schools over a year are significantly reduced by inactivity over the six week summer holidays. Research has extended to the construction of glass schools or at least school rooms in China to enable continuation of the research in a built environment adapted to climatic conditions. Though there is continuing discussion of other factors including those influencing progression, Professor Kathryn Rose head of orthoptics at the University of Technology Sydney, stated (cited in Bowden, 2017),

> An eye that's myopic is an eye that's growing too fast, too quickly and what we are actually thinking may be occurring is that when children spend time outdoors they are getting enough release of retinal dopamine to actually regulate the growth of their eye … I think there is a public message here that yes, we can be smart and sun safe, but we also need to be outside. (para. 15, 22)

Further reflection suggests engagement with the outdoors, in both formal and informal activities, can contribute to the development of many other positive personal and group attributes. These include: experiencing exhilaration, mindfulness, and the outcomes of building skill, strength and knowledge; the valuing of new or unique environments to orient an ecological perspective; increased awareness of personal feelings and mental state—anxiety/fear, failure, and isolation as compared to acceptance, composure, and confidence in resilience and the assurance of practiced problem solving. Group benefits include learning how to: work together—cooperation, coordination, accepting different roles, reliability/trust worthiness, and patience; offering mutual respect and support within a group; sharing goal achievement through developing and accepting mutual responsibilities; and achieving a sense of 'tribe', class or group beyond the clichéd 'bestie'.

Renewed education is overcoming some of its short-sightedness, rediscovering the essential benefits of interaction with the outdoors—sunlight, fresh air, water, natural environments, including awe and questions about how it 'comes to be'. Goals state with greater clarity the objective of teaching well-being that includes mental health—acknowledging identity, purpose and place.

Within a transcient, technologically focussed society of potentially chaotic individualism, children need to also be confronted with the comparative stability of imposing, preserved wilderness; the inter-relatedness of surviving eco-systems; calmness in space, … . Limiting the interaction of children with the natural environment has significant physiological, psychological and by implication educational consequences. The developing ascendancy of well-being as a goal for life and particularly students' futures, invites curriculum implementers to ensure a multi-focus approach so as to minimise detrimental impacts not just of socialised technological environments, but also the school environments imposed during learning. It must not be short-sighted.

"Limiting the interaction … with the natural environment has significant physio-logical, psycho-logical and … educational conse-quences."

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