

Chapter 19

Papua New Guinea's Education, Science and Space Exploration: A Primer, and the Bad Role Models of Christianity and Oxford/Cambridge, Again, Calling for an Improved and Globally-All Inclusive STEM-Type Cybereducation for 'the Bush' and for Global Sustainability



*We don't need no education,
no dark sarcasm in the classroom,
hey teacher, leave us kids alone
We are just another brick in the wall"*
Lyrics of 'Another brick in the wall' by Pink Floyd "The Wall"
album
*... did not possess the big ego that today apparently is the
prerequisite for a career in Science...*
P. Hiepko life review Paul Hiepko (1932–2019) (bioone.org)

Abstract Throughout generations, Papua New Guinea (PNG) has taught its young people in a very sophisticated way how to stay sustainable and remain within the bounds of Mother Earth. This 'school' was not institutionalized nor supported by the international missionaries or by Australia who both happen to dominate PNG education now. While 'modern' education today is done in English, or at least in Melanesian pidgin, tokples and its many unique variations get lost and thus the cultural lifestyle, habitats and species with them. That has been known for decades but still English-style education is promoted. Here, it gets outlined how a 'modern' science-based education on a national level is pretty inefficient, tends to make PNG poor and not competing much with global society. Instead, it will further result into a brain-drain, and decay of the 'bush village' and sustainability skills and good lifestyle that evolved over millennia. It's a cultural destruction unabated eradicating cosmologies that co-evolved over millennia but happening in front of our eyes and knowingly now for decades. Alleviation of poverty and wealth re-distribution remain questions of the day, and how achieved using modern tools like computing, education and the www? An outlook is provided how PNG can move forward and what can be learned from ancient PNG concepts for a relevant global sustainability education and subsequent governance instead that serves everybody well.

Keywords Papua New Guinea (PNG) · Students · Education · New generation · Generational justice

19.1 Introduction

If ‘*education is everything*’ and a future investment is an indicator, then PNG might have a tough road ahead.¹ That is because PNG is already ‘*on the brink*’ (Windybank & Manning, 2003). Internationally, the education levels in PNG rank rather low, and also when considering that the public school system is widely in the hands of conservative religious groups and sects, e.g. from America (<http://www.pngembassy.org/religion.html>; Beehler & Laman, 2020), as well as Australian-supported and approved (Megarrity, 2005; Papoutsaki & Rooney, 2006 for colonial education in PNG through Australia; O’Donoghue, 2009 for British Empire perspective). While the religious groups in PNG stick to their bible dogma (and that is primarily the old testament including such topics like family planning, role of females in society, lack of abortion, the ancient notion of ‘eye for eye’ and national patriotism), the Australian reform of PNG schooling is ongoing in parallel. That’s done to put PNG on a modern industrial path and give the youth a better outlook and job opportunities: “*why not becoming an astronaut ? The world is yours...Dream big!*”. For PNG, that might mean to land a job in Australia and New Zealand and live in a suburb but hardly more. It’s a programmed braindrain for PNG towards Australia, New Zealand etc, typically found in the high-paid jobs. If Australia supports education in PNG, it supports itself.

Well, the narrative of education sound all common and great to western ears; except that the job market in PNG is not industrial, nor large or high tech, certainly not unionized or paying high wages. And the adjacent Australian job market is not that big neither, nor that welcoming, or easy to navigate, all inclusive and accessible for PNG citizens in the first place (Colic-Peisker & Tilbury, 2007). Australia’s job and living niches are globally flooded and have been for a long time already. PNG citizens might have a hard time to compete there nowadays; this is even more so for females in and from PNG (Fox, 1999). And obtaining highly educated workers for jobs in Australia from PNG easily contributes to a PNG brain drain of ‘the best and brightest’ (Gibson & McKenzie, 2012; Negin, 2008) for nurses and medical practitioners, etc.), which is not what national education should support, much. A common phrase heard with such type of education from Oxford and Cambridge says “*Wanna some fries with that ?*”. So why all re-applied in PNG then?

If one were highly educated in PNG, where to go other than to work abroad and make real money? Keep in mind, PNG citizens are usually dark skinned, which makes it still hard on them to blend in, in Singapore, in U.S. or in Australia. And if you ever have a great or highly paid job in PNG, e.g. in engineering, medicine, or

¹ For long time, the wealthiest nation was the U.S. Whereas soon, the global leader in education, and as judged by the graduation rate, will likely be India; a nation and culture with an entrenched cast system of poverty. India will not only soon be the nation with most people in the world, but also with most students and with PhDs and M.Sc.s. The implication of this situation is not well understood and addressed yet by most western nations. For instance, many U.S. universities have essentially a quota, a limit, on how many foreigners they can accept so that the local students are not outcompeted, creating a skew to access and output, who gets educated.

the court system, the pressures of tribalism will be felt strongly on those employed as the tribal members will come asking for help, tribal village support and for favors with the highly educated ‘upper ones.’ In the tribal system, one is to serve the tribe, as the prime unit of concern. That’s what a Big Man does and where your home is. Many examples elsewhere in PNG show us no other.

But if the Australian model is ‘PNG’s educational aim’ and the rule now (Klaus, 2003; Malone & Paraide, 2011 for adjustments to local languages, and Kulik, 2019; Aikhenvald, 2004 for subsequent language extinction), let’s also agree that most Australians themselves will not get, or take, a job with the space agencies, or become Astronauts or work as a surgeon in a hospital, in an American software company or be a manager with a Japanese car manufacturer (Note: The Australian Space Program and such jobs are actually next to non-existent. Australia as a middle-power is not relevant enough and not part of the ‘space game’ to start out wit). And that is then even more true for PNG citizens and immigrants. If Australians do not get such jobs (see Redmond, 2015 for Australian inclusion issues and Saunders et al., 2016 for national poverty rates), then PNG citizens will be ranked much lower and have virtually no relevant opportunity whatsoever. That’s reality. Keep in mind again, in just a few years from now most graduates will be produced by mainland Asia, namely China and India, as the world education powerhouse of jointly app.2.2 billion people. Adjacent Fiji for example sees those influences and effects already for decades (Gillion, 1977), and virtually, all of the Pacific experiences the upcoming China dominance struggle, certainly Solomon Islands (e.g. Aqurau, 2021).

In the meantime, the costs of education in PNG are still going through the roof, and it breaks down the initial village and society system, as described by Cousteau and Richards (1999) in the community management of coastal ocean resources where a much stronger emphasis on ‘money making’ overharvests the ecosystem. In that example, the ‘money grab’ commercialized the ocean resources of the community—the ‘common good’ of giant clam gardens. The change was driven by fear of lower education for their own children, and thus, the giant clam gardens were overharvested for monetarization, paying school costs of the Australian educational business model imposed onto PNG, its people and resources. It’s done now to a degree never seen before and destroying an ancient concept around giant clams—the ocean commons—that co-evolved successfully for millennia but not anymore; why?²

Just looking at the gender equality statistics, family planning and sexually transmitted disease statistics (STDs) for PNG show the long-running ineffectiveness of the religious approach to education which dominates PNG and its society for over two centuries (see in contrast Richardson, 2005). There has been little progress (see Watkins, 2018 for feminism in global context instead). PNG citizens are not really making educated western-style decisions, and that’s because there is little relevant effective education on the topic available to them nor does it fit their live context. PNG is a young nation after all, and the age pyramid is dominated

² This reminds of the insane student loans in Canada and the U.S. literally enslaving entire generations of university graduates. For instance, the president of the U.S., Barack Obama, paid back his student loans eventually during his first office term in the White House.

by young people also. But what is the progress with the church and Australia, both are given the upper hand for the public good in PNG such as education and public opinion (Foster, 2002)? Are we seeing any astronauts from PNG in space yet? Or do we see many PNG citizens as software engineers, CEOs or as leading international fashion models (see <https://www.businessadvantagepng.com/papua-new-guineas-fashion-queen-design-and-hard-work/>). And so, just compare that with socialist Mongolia for instance which had a cosmonaut in space with Russia already as early as in the 1960s (public information here: https://en.wikipedia.org/wiki/J%C3%BCgderdemidiin_G%C3%BCrragchaa). So why not PNG by now?³

The Australian educational model does not send you to space. All what The West and its society and workplace really does is to run around in an ever-incomplete unsustainable spiral, with a dangling dream and hyped hope, but from one event and problem to another, and trying to pseudo-resolve problems that are consistently unresolved and popping up in a re-occurring cyclic fashion, exacerbated and hyped up by the media (owned by vested big money; Cockburn, 2013). From the eco-crisis over world hunger to climate change and overconsumption, pollution, warfare and human crisis and pandemics. Major programs and projects get done and approved—also for PNG—but which resolve next to nothing longterm while the wider unsustainable bubble explodes further, globally (Czech, 2000). So after 100 years of very intense education (Megarrity, 2005), some might call it industrial brainwashing, where are we now? Are people and humanity, world peace, any better by now, is the world and its resources better off? Are we all 'free' or enslaved?

19.2 A Better World Through Better (Globally) Institutionalized and Certified Education?

Public institutional education remains a big and unresolved scheme though, virtually anywhere in the world. It receives a global assault, e.g. it's way too expensive and with such narrow cost metrics, and it's work undone. In earnest, western education is an anti-experience for many (drop-out rates etc will show no other, teacher resignations speak the same language). That's certainly true for PNG. As I can attest from my own work, and as shown in Beehler and Laman (2020) for New Guinea, schools they rarely have books, or even pencils for their students. The WWW is widely absent there. Chalkboards rule, and memorization and recitation dominate—bible school style; modern pedagogy is widely lacking but follows older schemes, often even with a whip (see for instance Papoutsaki & Rooney, 2006). The notion of a cyber infrastructure, remote or digital online education—as per STEM by the National Science Foundation U.S. (<https://ncses.nsf.gov/interest-areas/stem>)—sounds rather funny-tragic for PNG realities, and the bush (=majority of PNG)

³ The Indian astronauts in the U.S., both as the major global nations, were a big deal and widely celebrated.

As per Beehler and Laman (2020) teachers in PNG are not so well educated neither (while I cannot assess that argument, I found great skilled and and curious PNG teacher friends all over during my work in PNG). They lack a modern pedagogy, continued training, and are paid poorly, with a delay or not at all; often they leave their assignment and do not come back. The salary of teachers remains a major discussion item loaded with ideology. Arguably, from my observation—as backed up by metrics and expert opinions (Beehler & Laman 2020)—teachers in PNG are not only poorly paid but their employment terms are adventurous; that’s even more so in rural areas (PNG is to 86% rural), for females, and where they are not even speaking the local language; they are not part of the tribe and culture there. So how to educate the children then effectively? Not many teachers even want to be in villages or rotated around often for job contracts all over PNG and its bush and islands. Many teachers then are ‘gone for Xmas’ (a term presented by Beehler and Laman 2020 for those teachers working in the remote bush, in a foreign language and cultural tribe of PNG without much support, and then left for good).

With over 700 languages, PNG has the massive language maintenance and cultural issue. Whereas I would call it a very advanced and living concept of languages in PNG—many locals speak easily 3–6 dialects. Those are precisely adjusted to local living conditions—but now this is to go away and become unified, as per latest education decrees imposed by Australia to be ‘modern.’ As per Beehler and Laman (2020), some schools were teaching in local language, others in Neomelanesian Pidgin, or English. Whereas the Australian concept of “Bridging to English”—as supported by AusAID (<http://www.education.gov.pg/TISER/documents/in-service/in-service-primary-unit8-bridging-to-english.pdf>) and widely imposed onto PNG (Litteral, 1999)—is essentially a ‘big vacuum cleaner’ to turn everybody into an Australian and western mindset and push them from the bush into hubs and cities; suburbs rule. The paying jobs are in Port Moresby (POM), cities along the road system, and in Australia; unless one stays with the gardening concept, so-called ‘uneducated’. Such an institutional education wipes out and impoverishes rural areas, just as it did in the western world decades ago (e.g. Leon, 2005 for the EU, FH pers. com.). It’s like a train: Parents essentially have to cover the education costs of such a ride. It starts with the lower primary classes (grades 3–5), there is a starting bilingual education (including English), and at the higher primary (Grades 6–8), it’s fully English then (<http://www.education.gov.pg/TISER/documents/in-service/in-service-primary-unit8-bridging-to-english.pdf>). Loose your roots in full with a degree towards a sub-urban city live

In official terms, that means ‘tokples’ is replaced with pidgin English (e.g. Klaus, 2003; see Kulik, 2019) for subsequent extinction of languages and then ancient lifestyle and sustainable culture. And for western educated people, even the latter solution is not much appreciated because bush English is actually not much regarded in affluent urban areas of ‘The West’. According to that, PNG remains in the dark ages (Richardson, 2005). In other words, the vast and globally unique and globally recognized diversity of languages and cultures in PNG is toyed with, given up, and everybody is unified for a single ‘civil’ tongue to satisfy ‘progress’ metrics from Australia, the churches and ‘the western industrial society,’ that is, the tongue

of the industrial mind toward efficiency. Money talks. It's social engineering at its finest toward a global neoliberalism in the tropics failing most aspects, including biodiversity and wilderness (see Huettmann, 2015 for Central America)!

And that tokples tongue is still not the tongue of the world leaders, its essentially perceived as a lower form of English which is frowned upon once you use it outside of PNG. It's second class. Melanesian Pidgin is far away from Oxford or Cambridge English; the latter is a style favored by Australia. It sets PNG people up for being 'outsiders' and not to fit it, simply by speaking. In real world, that means loss of income and to be excluded, as a people, as a nation.

It must be stated here in bold (and just like Jerry Diamond did in his books): Despite a wide lack of western education, PNG people are obviously highly intelligent and easily outsmarting 'average' industrial and urbanized—so-called civilized—western citizens—on issues of biodiversity and wilderness maintenance, and living in PNG. They did so for over 47,000 years, why not now?

The western model of a 'modern,' subsequent industrial and neoliberal education fails in the bush, while in PNG other values and skills matter more. Already the use of several languages and dialects achieves that, and so does the cultural intelligence and expertise being a 'gardener,' often making use of over perhaps 100 species of plants and animals for a subsistence use, applied on a steeped sloped soil and remote bush in a village framework with deep social context (see Lawrence, 1984 for deep and wider knowledge). Where is that taught, and for free, and why changing it with such a high cost (see Beehler & Laman, 2020 for impacts of a New Guinea culture loss)?

From a perspective of a university teacher, I was always amazed about the PNG skill sets and education level in real live, and its realities in remote villages. Of course, PNG people are very smart indeed, just like we all are! They know how to live and to make a living where no westerners would though. One can easily see that fact by looking where the highly educated western people live, including the missionaries and teaching advisors: Not in the bush; most have left PNG, and if they stay in PNG they are in the cities of course.

Textbox 1: Impact Factors in Science and nothing in Papua New Guinea? Politics beats easily the Sciences

Papua New Guinea (PNG) has a surprising small market for science employment. Whereas the pool of people who want to do research in PNG is much larger, specifically those who want to collect species, find new ones, and export specimen, all done from areas of 'uncontacted tribes.' It coincides with a stereotype featured by The Western World and their institutions and media.

People who are experts of PNG topics hope for an academic position—any position on that matter—so that they can continue their business. It just follows an uninspiring mindset that comes from the colonial time and represents a wider powergrab, e.g. 'me and the last wild' but leaving out people of PNG.

Table 19.1 Features where PNG dominates in absence of the so-called modern society

Item	Rank	Impact	Modern context
Pisa study (Math, Reading, Writing) Source: https://factsmaps.com/pisa-2018-worldwide-ranking-average-score-of-mathematics-science-reading/	PNG is not included in the assessment	PNG ranks extremely low for reading, writing and math skills in the population	PNG gets widely behind and has little options
Mandatory years of education Source: https://education.stateuniversity.com/pages/1166/Papua-New-Guinea-EDUCATIONAL-SYSTEM-OVERVIEW.html	Not well stated; primary education only (7–12 years, attendance is not compulsory; 70% finish a formal education)	PNG has many citizens not well trained and a high rate of illiteracy	Like above
Number of universities Source: https://www.commonwealthofnationsorg/sectors-papua-new-guinea/education/universities_and_colleges/	App 8 (and colleges and technical schools)	PNG left with little graduate-level education	Like above, little science power possible
University ranking	NA	Low attraction rates to be there and get high quality researchers	Like above Weak graduate education
Software companies	None	Little employment and options to shape the future	Without software one can hardly participate
Car manufacturers	None	Modern transportation means hardly available	Cars are essential for modern/western society

Despite the huge topic of PNG with relevance to humankind, PNG scientists and experts are rel. few. Like in the western world, science has a low standing and pay in PNG also, so why to engage there? Consider the actual need for a PhD and elaborated employment paths. Consequently science is not an attractive job option for most people, not in PNG neither. Becoming a scientist, and working hard at it, is not a good vision for most PNG people; it's not affordable nor so meaningful.

That matters when other jobs are easier and more lucrative, e.g. engineering, nursing. But the lack of a proper science platform in PNG harms PNG, and it's done on purpose. For such essential things PNG must rely on Australia, and U.S. to get it done (beyond earlier missionary efforts, the role of the EU in PNG remains surprisingly tiny in the educational sector; how come?) To get it accomplished, that's true for health research, museums with specimen and industry and impact assessment research; and it happens to dominate income and wealth for a few people. PNG is not really to be funded, developed and included in such things for a good reason. The development by the international community that we see in PNG is not allowing for a well-done and sound research and academic model. Apparently, it was overlooked?

Rest assured that such a PNG science—done by outsiders instead -, and as we widely see in PNG, then has an 'impact factor' (usually the Hirsch h-index, or Google Scholar downloads) which benefits the western world and outside sources the most but leaves PNG further behind. It's here where the change in effort and emphasis is still needed, and where it can inform the western world on their mis-guided science model for betterment (Table 19.1).

19.3 Science Education in Papua New Guinea: The 'Modern' College and University Debt Conundrum Revisited with Public Sustainable Gardening

Looking at the metrics, the top 300 impact researchers are not in PNG or from PNG (<https://www.webometrics.info/en/hlargerthan100>); politics drives science which is 'money only', chasing funding to make a few rich people richer! The wider public good is ignored and essentially discriminated against.

Would it not be nice to be western educated and then to work as an academic with easy tenure and teaching in PNG at a college or university to less fluent locals for a good cause and money?

Well, many people had that concept in their mind; it worked only rarely though. Not many public research and science institutions in PNG are in a good shape or have long-lasting budgets, or can compete with the west for faculty members, tenure, social

welfare and pension plans. There are only a few universities in PNG and while attractive and at adventurous study locations none are ranked highly internationally or even much certified; see Lutton (1981) for the PNG library moving to Perth.

And how should a college or science curriculum really look like for PNG? Traditional PNG societies tend to have very little individual and material wealth, just common wealth. Modern ‘western’ school education is trying to flip that: turning public ownership individuals into modern affluent members of the western capitalistic society, not? Best to forget gardening as a skill. From public entities to materialism and the ‘*homo economicus*’ as the citizen template for everybody.

It’s also worthwhile to ask what the costs are and what a human model the modern sciences and universities really promote, and what they have promoted (see Vetta, 2021 for modern science and their statistics tools actually used to support racism, etc.). The recent mobbing discussion in academia and the loss of positions and talent speaks to that model and its failure. Modern metrics of a so-called progress show us no other. It’s the direct real-world outcome of Cecile Rhodes and his message and scholastic legacy in the British Commonwealth and Dominion, and through Cambridge and Oxford (Knudsen & Andersen, 2019) delivered globally; what did it really bring to the table and for people of PNG, or to tackle poverty?

There are perhaps three concepts with university science education to go by:

- elite university (Ivy League),
- good quality modern university (middle class) and
- people’s university (bottom up, city college or rural campus concept).

Harvard has been involved in PNG work, just like Oxford and Cambridge have, or many universities who wanted to be at the frontier, and at the cutting edge of civilization and colonial research. But arguably, PNG itself is not really part of the elite university system and cannot make it there any time soon, nor is anybody pushing for a powerful PNG university and PNG research really. Staying in the traditional imperial research and teaching paradigm is not healthy or sustainable for costs and outcome. There is very little what ivy league universities really have contributed to PNG and its people, period. They are happy to use PNG for their own university and career agendas (usually just money-related), but less so to help PNG or to ask for that.

And so, other options come to play for moving forward in good terms: middle class college. That’s essentially the public Australian or Canadian university model. As middle powers such nations cannot provide a top ivy-league institution or even maintain it, instead they try to offer a certain middle-class hybrid striving for ‘the best’ but using and selectively picking such world-leading metrics as they can. Their universities can still be ‘decent,’ humble and sustainable but usually are short of money, short of long-term commitments, poorly advised for sustainability, and heavily in a neoliberal path they tend to pursue, e.g. for their private funders. Patent production is a good metric for them, but hardly for the wider public good!

In reality, the Australian and Canadian etc universities rely now on outside money and that often tends to be stock market, nuclear industry, mining and gas and oil funding the most; their forestry and fisheries funds tend to be subsidized and/or highly industrial and not supporting much sustainability (the national state of forestry and

fishery speak for themselves). There are major problems in such a university system with health care costs (see Archibald & Feldman, 2014 for cost schemes and a very poor reality). Thus, under such a business scheme those universities can have an engineering and military-type section as a money maker, but widely lack many other details, including well-funded arts, humanities or philosophy (and should PNG not have a major philosophy department, and a history one, and an anthropology and a social sciences one?). A well-balanced Humanity Science is widely diminished or absent there in such a “modern” university business plan also, but while the Oxford /Cambridge link is promoted (and where most good students then are to go and try to apply for; try for a Rhodes Scholarship...). Money talks in western education while student debt is on the rise. The Anthropology Department in such a system invokes some relevant questions on the topic, as science and Anthropology have some rather colonial underlying concepts, to study the ‘other’, exotic people, and measure, describe and experiment with them (a concept that has been widely dismissed as biased and faulty in Psychology and elsewhere for decades already, e.g. Garrison, 2009). PNG has still been a feast and platform for such antiquated thinking (Meade & Leaves, 2010; West, 2006, etc.). Be aware, PNG hardly has a middle class to start with. PNG is not really a class society. The otherwise typically found entrenched middle class of bureaucrats is mostly missing in Wantok PNG. Most people in PNG are rural, gardeners, and cannot afford a solid western college education, and the few high-income PNG citizens go abroad, or get jobs to qualify them for leaving.

The third option, people’s university (education for the general public), is widely unused and somewhat absent from PNG’s Australian advisor lead. Educate to put power towards PNG is threatening Australia and the church. Perhaps some church efforts can be perceived as a public schooling? But overall, it’s a model that I find attractive and powerful though, similar to a community college. As the churches apply it, it’s just for their own gain and remains in that sphere. This system stands powerful but runs a long way against the Elite University system, and also against the industrial-funded university because industry is not in charge and costs and gains are ‘public,’ not private (Figs. 19.1, 19.2, 19.3, 19.4 and 19.5). At minimum, it can help out PNG.

PNG remains a ‘young’ nation, also judged by its population pyramid. And that’s specifically where the lack of education hits the hardest: And thus, PNG will remain behind for the next generation also. PNG’s modern education outlook remains pretty grim, so then does its generic development outlook. But that’s just one side of the coin. In terms of sustainability, gardening, PNG has a great outlook and it can sustain PNG well into the future! But how taught and what degree and certification?

Education is a key ingredient though when it comes to putting a nation ahead, and it’s not really happening in PNG. The key discipline for survival in PNG simply remains ‘Gardening.’ But exactly that is certainly not promoted or taught with the Australian model or the church model, or the western university scheme. Hundred years of trying shows us no other, while 47,000 years of inter-generational informal education lead to sustainability instead. The current education scheme in PNG destroys gardening and sustainability, village life.



Fig. 19.1 Papua New Guinea heroes: who wants an education to fly to the moon?

So how good really fares the education model that comes out of Oxford and Cambridge and the Ivy League?

In the global discourse, violence and chaos drives the wider public conception of PNG. But upon a closer look, the European and EU history and legacy are far from non-violent itself, see for instance Die Welt (2021) for Giles de Rais alisa Blaubart as a serial killer in some core aspects of Central European history. And see subsequent disputes including the church (<https://www.pbs.org/newshour/show/pope-francis-apologizes-for-abuse-at-indigenous-schools-but-the-pain-remains-for-many>) and their PNG involvement (see for PNG artefacts by F. Kirschbaum from the 1920s <https://news.artnet.com/art-world/pope-francis-canada-2151805>). In reality, and like with much of western society, brutality and all its aspects are an inherent part of their own underlying model. Kindness was hardly promoted by its cultural leaders (see for instance biographies of recent western prime ministers like German H. Kohl (by his son Kohl, 2011), F. Mitterrand for France or T. Blair for UK and Iraq war entry; compare with Buckley and Lama (2021) for Dalai Lama, Asia, etc.). Claiming the moon, the space and the universe show us again no other than an imperialism and its aggression (compare with Gillison, 1993, Suzuki, 1993). So why educating then astronauts?

Now, providing a good civil strife (*sensu* Gosarevski et al., 2019), that's where education is claimed to be a good measure and to actually create a civil society. But just look at the details for the western nations and you will see, modern education; ethics and values are widely absent (see for instance Bandura, 2007). How can Civic Strife develop when the teachers themselves come from a highly elite and



Fig. 19.2 Huge skill and globally acclaimed talent and expertise sits in the Papua New Guinea culture and society, as exemplified in the ancient and highly-valued art and carving

competitive, ruthless and fierce education system, but often with jobs simply handed over throughout generations (see typical examples in German President Weizsaecker and family and generational links including the Nuremberg Trail, Diplomatic career, industry contracts, Vietnam war and Catholic Church https://en.wikipedia.org/wiki/Richard_von_Weizs%C3%A4cker, contrast with the lack of job and hiring opportunities in academia for working class children in colonial Germany as a generic social reality critique, Frisch, 2020)?

The western education has an obsession with narratives of modernity and success. It is to look good, to serve the industrial employment, making money, starting with the obsession of teaching children very early (2–5 years) trivial 24 character alphabet (which is not rocket-science, e.g. when compared to learning biodiversity species in ‘the bush’ and subsistence lifestyles). The global society is getting obsessed with



Fig. 19.3 A superior sustainability and food security skill: egg and protein production, as shown here with Megapode eggs harvested from a long-term use of a forest mound

‘reading and writing’ performance metrics in the earliest age classes possible; as if that matters so much or speaks to the high quality of the educational system, money well spent and teachers...or as it would provide you with a job as a professor or astronaut, or engineer or economist for that matter. The root of human society, of cultural success, remains in sustainability, wilderness resources and benign gardening. And that’s really all about that; hardly more. Relax. PNG shows us no other.

The current ‘modernity’ and its obsession and drill with ‘education’ and its hype is a western mindset imposed onto the world. But it helps little and does not do good justice to the world’s diversity and sustainability needs, e.g. geographically adjusted local life and income skills that are sustainable. And they better be sustainable as one cannot fare any other, globally.



Fig. 19.4 “Where is a plumber when you need one”? Just like many other nations with a western scheme and on the coast, urban Papua New Guinea has a serious sewage problem, which relates to an education system problem, e.g. contamination handling, trained plumber and sewage craftsman, policy and good awareness and management; photo taken in a coastal hostel by the author

19.4 Some Options for a PNG Education Model from Looking Backwards to Move Forward at least another 47,000 Years: Indigenization of the PNG Curricular for the inclusive Online Delivery of Sustainable Gardening

As stated by Conner (2009) and others (e.g. Vetta (2021; see references within), one may agree that the classic sciences failed widely on the wider common public good, certainly in PNG. Pushing forward for educating hardcore scientists in PNG might be far off and not even modern anymore (see recent debate on STEM education in the U.S. and in Australia; Carter, 2017).

In addition to public healthcare, or some specific engineering, civic, administrative and self-sustenance skills, what should the education for PNG really be like, and for whom? Already computing puts problems into the PNG world where electricity is not available throughout the nation. Still, PNG is a world civilization located in a world class natural resource setting of strategic global relevance. And so it cannot be they are found running and lagging behind. They should lead instead and teach



Fig. 19.5 A typical sight in Papua New Guinea and its remote landscape and trails: what is unsustainable and not educated?

us, not vice versa. As suggested by Montgomery and Bishop (2006), conservation should be put on the curriculum, as well as local PNG sustainability expertise (which is vast and essentially world class).

In terms of teaching materials, PNG has so much to offer, and it will keep many universities busy with material and knowledge for decades to come. So why not using it? The big value of deeper ecological knowledge, how we relate with the universe and in a sustainable fashion, is widely acknowledged in the western world, e.g. Næss and Jickling (2000), but still not used well yet.

The indigenization of the university curricular is a worldwide scheme now, done in New Zealand as much as in Alaska and Canada (Table 19.2). There are many of those discussions in Australia also. So this offers a new hope and can be used stronger. As shown in Suzuki (1993), the earth's knowledge is deep and wise.

Table 19.2 Selected examples to indigenize the curriculum and other activities

Location	Topic	Example
New Zealand	Maori knowledge	Kukutai and Walter (2015)
Alaska	Fisheries	Whyte (2017)
Canada	Process overall	George (2019)

But for modernity, online learning will remain a deal breaker. While it becomes a global standard and can be done virtually from any angle and location, PNG in the bush does not have a strong eLearning (distance learning) component. That’s because they have little internet and less computers and no vision reality. In the absence of secure classrooms, the computers in schools easily get stolen out of adobe housing with palm leaf roofs and no doors.

With such a reality view, there is still no real public need flying to the Moon, or explore Mars, hardly to dive to the seafloor, for anybody, nor for PNG citizens (where most people cannot really drive a car or have no driver’s license let alone a proper car insurance). But a basic fluency on issues of the modern world, and embedded into sustainability will help it, in a decent and humble fashion. That’s a good model to start from.

So where has over 200 years of colonial, industrial activity and Australian oversight really left us? How much progress was provided, e.g. Imboun (2007), Dorney (2016). The infamous Rhodes scholars—the ones that are essentially paid by exploitive mining money supposed to lead the Commonwealth and trickle down a good economy to everybody—arguably seem to be at the end, and their arguments appear rather hollow by now (e.g. Walker, 2016). What does such a system really lead and contribute to? And what education, for what and for whom,STEM-style (https://www.nsf.gov/news/news_summ.jsp?cntn_id=243,502) education has not really reached PNG yet, nor does it perform well in the first place and when computers are added. Instead cybereducation—in the cloud—can only work when it has a sustainable business model underneath. After all, good Earth Stewardship and World Peace matters and the connection with Deep Earth as stated by the elders of this world (Suzuki, 1993, Chapin et al., 2011; <https://www.wisdomweavers.world/>).

One would argue the world needs simply more PNG teachers, parents and their traditional knowledge spreading bush knowledge online to overcome the western ‘Nature Deficit’ (Louv, 2011) invoking a wider teaching reform that goes to the core of the problem: poverty, society wealth and a strong nation being sustainable and ready for a global roll-out.

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