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## Abstract

This paper, presented at the 54<sup>th</sup> International Conference of the Linguistic Society of Papua New Guinea (LSPNG) in September 2022, aims to contribute in a meaningful way to the ongoing debate on how best to raise the quality of education in Papua New Guinea and help achieve the sustainable development goals of Vision 2050. Arguing against the nowadays actively promoted ethnocentric ideology, we posit that science has no ethnicity and, therefore, cannot be “foreign” to any human society. Focusing on the role of English, the Language of Instruction (LOI) in Papua New Guinea’s education system, as the medium for transmitting scientific knowledge, we argue that it cannot be viewed as a foreign language in this country. Referencing the recent advances in neuroscience and the findings of the extensive research by the Linguistics Department, School of Humanities and Social Sciences (SHSS) of the University of Papua New Guinea (UPNG) into the “age factor” effect on Second Language Acquisition (SLA), we suggest that bilingual (Mother Tongue + English) Early Childhood Education (ECE) will enable children’s learning in school and, thus, raise the quality of education in Papua New Guinea at all levels. Citing the One-Village-One-Preschool (OVOP) initiative in China as worthy of emulation, we claim that a similar strategy would help Papua New Guinea break free from the yoke of economic dependency, perpetuated by a systemic lack of quality human resources.

**The only good is knowledge, and the only evil is ignorance.**

~ Socrates (c. 470-399 BC)

## 1. “Foreign” Science in a “Foreign” Language

In a recent seminar,<sup>1</sup> Professor Craig Volker (JCU) blamed the “modern Melanesian feelings about the primary role of public education as a means of acquiring foreign knowledge in a foreign language” for the failure of Vernacular Education [1] in Papua New Guinea. He wondered why, “Although Papua New Guinea (PNG) has more languages than any other nation on earth, its public education system is remarkably monolingual in English,” adding that “the degree of public hostility to reforms that introduced vernacular early primary education at the end of the last century” was “equally remarkable.” Prof. Volker felt that “With better teacher education, material production, and community consultation, this hostility could have been avoided.”

The roots of popular dissatisfaction with Vernacular Education were much deeper, however; they led to an organized *Citizens’ Campaign against Outcome-Based Education (OBE) system in Papua New*

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<sup>1</sup> Jawun Research Centre SEMINAR SERIES: Why local language education failed in Papua New Guinea – C.A. Volker 15 June 2022; YouTube Link: <https://youtu.be/qY-ksQnxRA>

Guinea: RAUSIM OBE LONG PNG. Their website<sup>2</sup> features a detailed analysis of the “fully blown national tragedy” which unfolded as a result of the mismatch between the OBE curriculum, designed to foster the cultures of subsistence farmer/hunter-gatherer communities, and the needs of the fast-growing modern economy [2].

The advent of mobile phones, “the most transformative technology” of our time, in the words of Professor Jeffrey Sachs<sup>3</sup>, accelerated the socio-economic changes sweeping through the nation and amplifying the mismatch. Public concern over the plummeting academic standards finally resulted in the abandonment of Vernacular Education policy (VE), which was replaced in 2013 with Standard-Based Education (SBE) [3]. However, the downward trend in the quality of education in Papua New Guinea has not been easy to reverse, for the acute and chronic deficit of qualified teachers is part of the long-lasting legacy of VE. This, perhaps, explains “the degree of public hostility to vernacular education” that Professor Volker found so remarkable. Newspaper headlines have for years reflected sustained levels of public concern over the falling academic standards in PNG (Fig. 1):

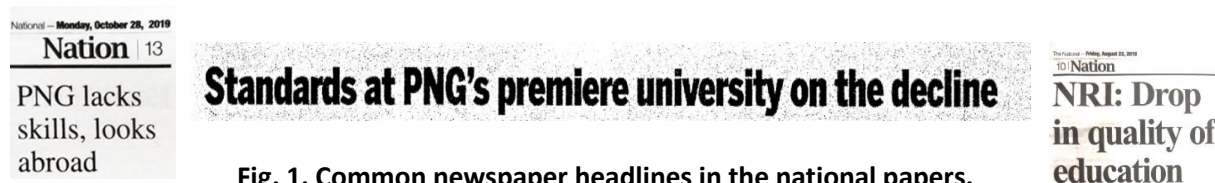


Fig. 1. Common newspaper headlines in the national papers.

One of the many concerned citizens, Steven Koya, wrote in the National of August 20, 2019,<sup>4</sup> “OBE Curriculum was in use for the last 18 years. However, seeing the negative impacts posed on students’ education, it has been opposed by many teachers, parents, and stakeholders. ... Re-introduction of SBE is a break-through by the education department to mend the shortsighted unprecedented educational damages which were done by the OBE curriculum.”

What was this “unprecedented” damage, inflicted by the VE policy and the OBE curriculum? First and foremost, it was the underlying idea of “*foreign science in a foreign language*,” both alien – and therefore threatening – to traditional cultures.

**Destutt de Tracy (1754-1836)**, the French philosopher and political economist (who coined the term *ideology*, the science of the formation of ideas) claimed that human society is nothing but a ‘series of exchanges’ which gives man ‘three very remarkable advantages’:

“**First**, the labour of several men united is more productive, than that of the same men acting separately” ... [Examples given: defence, work, requiring great force/ coordination]

“**Secondly**, our knowledge is our most precious acquisition ... Now no man is in a situation to see everything, and it is much more easy to learn than to invent. But when several men communicate together, that which one has observed is soon known to all the others, and it is sufficient amongst them that one is found who is very ingenious, in order that precious discoveries should promptly become the property of all. Intelligence then will increase much more rapidly, than in a state of insulation, without calculating that it may be preserved, and

<sup>2</sup> <https://rausimobe.wordpress.com/2010/11/26/obstacles-to-student-success-in-papua-new-guinea-canadian-volunteer-school-teachers-revelation/>

<sup>3</sup> **Jeffrey David Sachs** is an American economist, academic, public policy analyst, and former director of The Earth Institute at Columbia University, where he holds the title of University Professor. He is known for his work on sustainable development, economic development, and the fight to end poverty. Wikipedia

<sup>4</sup> <https://www.thenational.com.pg/mastering-english/>

consequently accumulated from generation to generation; and still without counting, what is clearly proved by the study of our understanding, that the invention and employment of language and its signs, which would not take place without society, furnish our minds with many new means of combination and action.

**Thirdly**, and this still merits attention: when several men labour reciprocally for one another, everyone can devote himself exclusively to the occupation for which he is fittest, whether from his natural dispositions or from fortuitous circumstances; and thus he will succeed better. The hunter, the fisherman, the shepherd, the labourer, the artisan,—doing each a single thing—will become more skillful, will lose less time, and have more success. This is what is called the division of labour ...

Concurrence of force, increase and preservation of knowledge, and division of labour; these are the three great benefits of society” [4].

The people of Papua New Guinea are part of the global human society – should they not benefit from the knowledge, collectively accumulated over the ages?

## 2. SCIENCE HAS NO ETHNICITY

The laws of physics operate irrespective of the languages we speak. It is the KNOWLEDGE of them that gives us POWER. Biology or linguistics – in whatever language – give us knowledge about the world we live in. Science, therefore, cannot be “foreign” – it is what empowers us to become doctors, engineers – or linguists.

More than a thousand years ago, **Al-Farabi (870-950 AD)**, the renowned Islamic philosopher, contrasted grammar and logic in his book *Iḥṣāʾ al-ʿUlūm*,<sup>5</sup> noting that they both dictate the rules of correct expression, but are different in that while grammar sets the rules of correct expression for one language community, logic sets the rules of correct expression that apply in all human communities [5]. These laws of thought,<sup>6</sup> the axiomatic rules of logic, create the structure of all rational discourse and, therefore, underly all human knowledge that we call “science.”

## 3. English Is Not a Foreign Language in PNG.

Since, historically, the language of education in Papua New Guinea is English, it is no more “foreign” to Papua New Guineans than it is to the indigenous Australians in Australia, to the Welsh in Great Britain or to the Cherokee or Apache Americans in the US.

English is the tool Papua New Guinean students use to extract and process scientific knowledge: the better they are at using it, the better they learn. One would think, all multilingual developing nations would want to ensure that their kids come to school, prepared to learn? Yes, of course – but reality is more complicated in resource-limited countries where “*He who pays the piper, calls the tune.*”

## 4. Language Education Policy in PNG

UNESCO and the World Bank shaped PNG education policy through funding projects.<sup>7</sup> Development partners do not dictate policy in PNG - they *drive* policy formulation through funding [6]. Thus, in the

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<sup>5</sup> “Enumeration of Sciences”

<sup>6</sup> The 4 Laws of Logic are those of 1. Analogy ( $A = A$ ), 2. Contradiction ( $A \neq \text{not-}A$ ), 3. Exclusion ( $X$  is either  $A$  or not- $A$ ), and 4. Reason & Consequent (If  $A$ , then  $B$ ).

<sup>7</sup> Richard Guy, Ch. 8. Policy Making and Implementation: Studies from Papua New Guinea (ANU 2009). See a summary of this chapter in Appendix I.

1990s, the World Bank supported only Universal Basic Education – with NO support for tertiary level of education.

In mid-1990s, the Vernacular Education Reform in PNG became law, limiting the scope of learning in village communities to immediate local concerns [2]. Since 1953, UNESCO policy on Mother Tongue Education (MTE)<sup>8</sup> aimed to:

- **Promote** the development and use of **mother tongue-based instruction**.
- Support the **critical role of governments** in promoting effective MT-based education.
- **Promote clear, sustained political commitment to MTE at all levels**.
- Make **MT acquisition the first priority throughout primary school**
- Promote policies that position parents/ family members as first teachers, engaging parents & community at all stages of program planning, implementation, and evaluation [7].

Judging by the level of public and parental hostility to VE, the MTE/VE policy makers had failed to “engage parents & community at all stages of program planning, implementation, and evaluation.” Their concerns were ignored for almost two decades, resulting in the “fully blown national tragedy” [2] snapshots of which have been captured in the surveys we have conducted in four rural areas of the Sandaun, Western Highlands and Morobe provinces (See Appendices II, III, IV and V).

## 5. Quality Human Resources – Prerequisite for Sustainable National Development

In a recent interview<sup>9</sup>, Professor Sachs expressed his concern over “economic dependency” which stifles many developing countries. His reasoning is too important not to be quoted extensively:

“Basically, an economy's place in the world economy depends on many things, but it depends very much on its technological development, its education levels, its capacity to innovate, and therefore to be part of a cutting-edge world economy. And a country like the Czech Republic, or Poland, or Hungary or others, absolutely has the capacity not to be a dependent economy, selling small number of primary commodities and so forth, but to be leading technology innovators and shapers of the world. So I'm less worried about such economies than I am about countries that are absolutely trapped in extreme poverty, or they have one commodity to sell.

There's a recent study that shows that in large parts of the world, young children don't even learn the basic skills of reading, mathematics, and science. So, what's going to happen to them? That's a kind of dependency, because they will not be living in places with ability to provide decent jobs, and livelihoods, and so forth. So, this question of dependency is real. It has a geopolitical element to it. Imperialism was a way to create, and enforce, and sustain, and perpetuate dependency because imperial powers, the Europeans in Africa, for example, did not educate the populations of those countries. Today, when a country is independent, its first task should be a good education of its children. This is the most important thing any government can do. ... And I would say that that's the key way not to be a dependent economy.”

Professor Sachs' response to some questions, voicing concerns over the impact of “Western” knowledge on indigenous cultures, was blunt:

“When I'm asked about the 17 Sustainable Development Goals, I always start by saying that SDG 4, **quality of education for all children**, is the most important of all the sustainable development goals.

<sup>8</sup> UNESCO POLICY TOOLBOX\_Language of instruction | Education | IIEP Policy Toolbox (unesco.org)

<sup>9</sup> Professor Jeffrey D. Sachs Interview with Prof. Creston Davis. 20 October 2022.

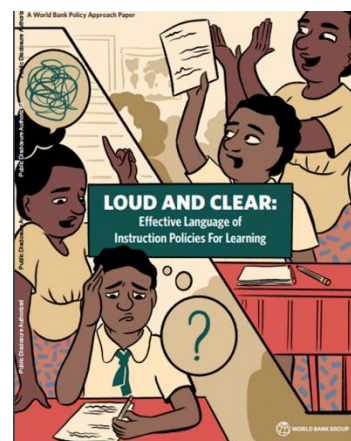
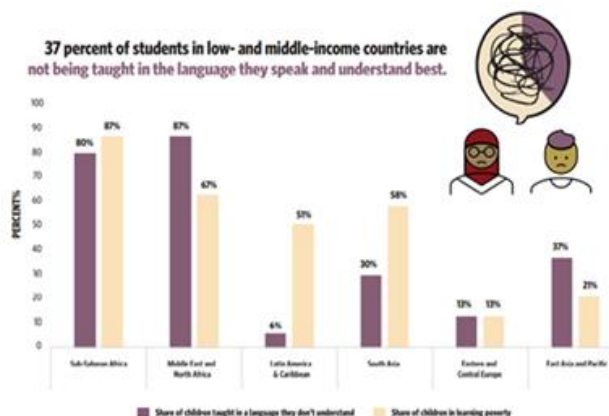
Education is the key at an individual level, and it's the key at a societal level, for being able to create the kind of future that we want. In SDG 4 is a target, SDG target 4.7, which says that all children should learn global citizenship, appreciation for culture, appreciation for cultural diversity, in other words to understand we're in a diverse world, to understand a culture of peace in that diverse world. So, our cultural heritage is fundamental for us as human beings and our identities, but our cultural appreciation of others is fundamental for our ability to live in an interconnected, diverse world. So, education, and respect and knowledge of our own cultures, but respect and knowledge of other cultures, as well, and especially the respect for diversity, so that we learn to treat each other with respect and in a peaceful way. ...

I believe that we start with the idea of building the future we want, and I believe that we can identify the kinds of lives that people around the world want. They want to be able to have economic security, they want to have decent nutrition, shelter, education for their children, health care, peace, social protection. Indeed, these are known as economic rights already identified in the Universal Declaration of Human Rights 75 years ago ... That's the future we want. ...

Then we ask, how do we build that? And that is a step-by-step construction project. And in a way it is a brick at a time. You need a blueprint. You need a strategy for creating this shared world, because it is a shared and interdependent world, but it's not beyond our means to see our way forward. And when it comes to issues of climate, we know we have to change technologies. We have to decarbonize the energy system, for example. When it comes to economic systems, we know it can't be the raw free market. That's not free for most of the world, that's incredibly costly for most of the world, but it can be a mixed economic system of market, government, and civil society in a balanced way. When it comes to modernity, it means that we cherish and build on our cultural traditions, our religious traditions, our very distinct and diverse traditions. But we appreciate our global reality and our interdependence as well. And to my mind, this opens up the possibility of a future that really is one of well-being, of social justice, of sustainability, and of peace, and that is the vision of sustainable development" [8].

To build this future, Papua New Guinea needs expertise in every field of science and technology. Yet, to get better university graduates, we need better Grade 12 graduates, and to get better Grade 12 graduates, students must do well in school, starting from Grade 1! In a multilingual society like ours, students can only do well in school, if they come prepared to hit the ground running, equipped with the language skills they need to learn – in PNG, this means English.

However, the pressure on governments is unrelenting – about a year ago, the World Bank published a new Language of Instruction (LOI) policy paper: "Loud and Clear" [9].



## 6. LOI Issue in PNG

Loud and Clear: A World Bank Policy Approach Paper describes the new World Bank policy approach on LOI, as part of the

operationalization of the literacy policy package in support of the World Bank's new learning target.

In it, the World Bank notes that 37% of kids in the South Pacific region are not taught in the language they speak best (this means, one of the 840 indigenous languages of Papua New Guinea). The World Bank sees the only solution to this problem not in bilingual Early Childhood Education (ECE), but in exclusively Mother Tongue Education!

Some of the World Bank's arguments are here, "loud and clear":

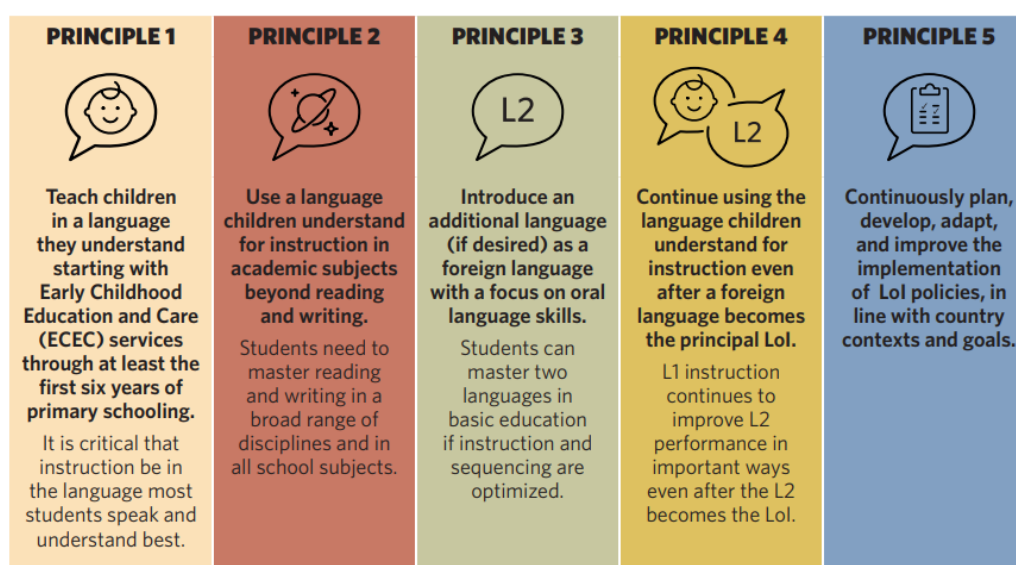
- "HUMAN CAPITAL ACCUMULATION IS LARGELY A LANGUAGE-BASED ENDEAVOR" – put simply, this means, "availability of quality Human Resources depends on the Language of Instruction policy"
- "SHOCKINGLY LOW LEARNING OUTCOMES MAY BE A REFLECTION OF INADEQUATE LOI POLICIES" – which means, "low learning outcomes are the consequence of not using Mother Tongue as LOI"
- "POLICY SOLUTIONS EXIST BUT ARE NOT BEING SYSTEMATICALLY IMPLEMENTED" – which means, "Mother Tongue Education must be implemented to improve learning outcomes"

The World Bank asks a loaded question: "Why are so many countries still choosing a LOI that results in significantly worse learning outcomes and social exclusion?" Several explanations and recommendations are also laid out loud and clear:

1. Language proficiency has labor market value. Parents often view competence in international languages as central to their children's career success.
2. The goal of achieving English proficiency becomes counterproductive when all instruction is in English, regardless of teachers' or students' levels of proficiency.
3. Consideration of the broader political context is essential to effective policy engagement on LOI issues.

Their proposed strategies must comply with five major principles (Fig. 2):

**The new World Bank policy approach on LOI, as part of the operationalization of the Literacy Policy Package in support of the Bank's new Learning Target, is based around 5 principles:**



**Fig. 2. LOUD AND CLEAR: Effective Language of Instruction Policies for Learning, p. 11.**

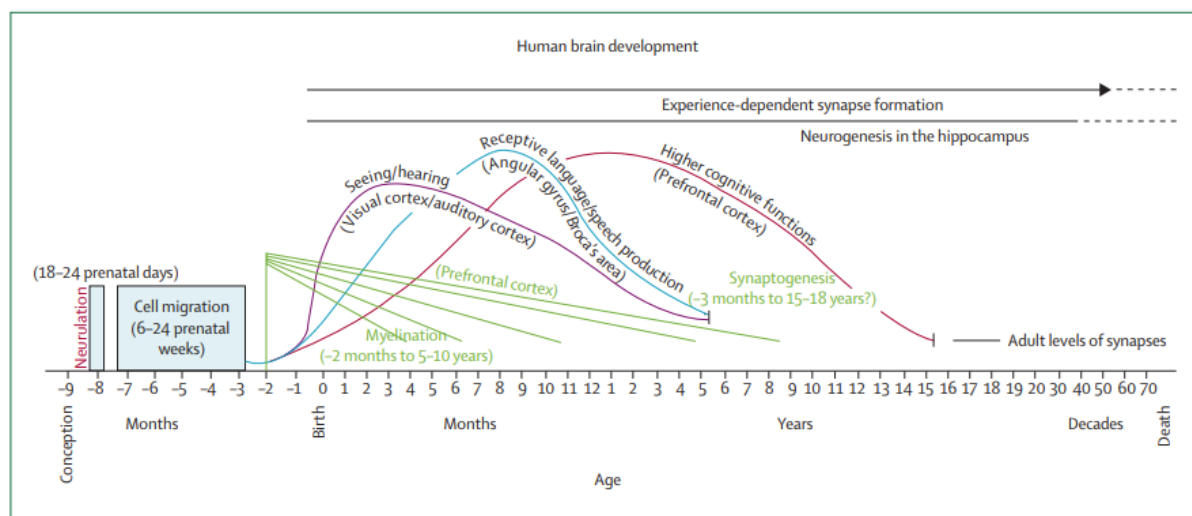
<https://openknowledge.worldbank.org/handle/10986/37892>

In the real world, this simply means: Children must be taught in their Tok Ples throughout their Primary schooling (which some lucky kids complete by the age of 12-15), and a “foreign” international language may be introduced (only “if desired”, and with a focus on oral conversation) in High School – they will then, hopefully, be educated enough to say, “g’day, mate!”

## 7. Neuroscience on the importance of early child development

We claim that the really not-so-new World Bank and UNESCO LOI policy contradicts neuroscience and its emphasis on the importance of early child development.

The young brain develops rapidly through neurogenesis, axonal and dendritic growth, synaptogenesis, cell death, synaptic pruning, myelination, and gliogenesis [10]. These ontogenetic events happen at different times and build on each other, so that any disturbances in these processes can have long-term effects on the brain’s structural and functional capacity (Fig. 3).



**Fig. 3. Human brain development.**

Source: Thompson RA, Nelson CA. Developmental science and the media: early brain development. *Am Psychol* 2001; **56**: 5-15.  
 Developmental potential in the first 5 years for children in developing countries. *Lancet* 2007; **369**: 60-70

The first 5 years of life are the “maximum impact” period in brain development, especially in terms of language acquisition. Kids learn language(s) directly, from mere exposure, and without any formal instruction. You can see, however, from the graph above that receptive language/speech production declines rapidly before the age of 6. With age, the *mechanism* of language acquisition changes; myelination of the “language areas” rewires the brain, so we lose the ability to learn a second language from mere exposure.

### 7.1. Brain development and environmental factors

Brain development is highly dependent on the environment: poor nutrition, iron and particularly iodine deficiency<sup>10</sup>, environmental toxins, stress, and poor stimulation and social interaction affect brain structure and function and have lasting cognitive and emotional effects [10].

Grantham-McGregor et al. reported that early cognitive development predicts later school outcomes; for example, in Guatemala, preschool cognitive ability predicted children’s enrolment in secondary

<sup>10</sup> Iodine deficiency is particularly dangerous, as it can cause severe mental retardation; Iodine Deficiency Disorders (IDD) affect many children in some remote mountainous areas of PNG [11; 12].

school and achievement scores in adolescence. In South Africa, cognitive ability and achievement at the end of grade one predicted later school progress [10].

## 8. The Age Factor in Second Language Acquisition

Suspecting the effect of the delay in kids' exposure to English (mandated by the VE policy) to be negative, the Linguistics Department SHSS UPNG conducted seven major investigations into the Age of Onset of learning English (AO) effect on students' academic performance in all six National High Schools and in the University of Papua New Guinea from 2014 to 2021. Our research findings showed a clear negative relationship between students' AO and their academic achievement (grades/GPAs) – in all six National High Schools, as well as at the University, the earlier students learned English, the better they did academically in school or University [13; 14; 15; 16; 17; 18; 19].

## 9. “SHOCKINGLY LOW LEARNING OUTCOMES” - How can we solve this problem?

Aristotle, the “Father of the Scientific Method,” always focused on evidence first. When he approached a problem, he would examine

1. What people had previously written/said on the subject,
2. The general consensus of opinion on the subject, and
3. He would make a systematic study of everything else that is part of or related to the subject.

So, to use the Scientific Method, we should look for evidence of how similar problems have been solved in other places.

### 9.1. Learning from others

Some 50 years ago, China faced similar problems – children in remote mountainous regions had no educational opportunities and were seriously disadvantaged, compared to urban kids. In 2009, the **One Village One Preschool (OVOP)** project was launched, to make Early Childhood Education (ECE) accessible to rural, poor, and ethnic minority children [20].

OVOP aimed to establish at least one ECE center for each village in the poor mountainous regions of China, and to provide free early education and nutritional supplements<sup>11</sup> to 3-6 year-old children who lived in those villages.

OVOP established more than 2300 ECE centers for over 170,000 3-6-year-olds, free of charge for all. Local Grade 12 graduates were trained and employed as ECE teachers (they were tech-savvy and good at using new technologies which they used to engage toddlers in games and songs).

Comparative longitudinal study showed that OVOP children had caught up with urban kids in their academic performance. Providing low-cost ECE to rural children in China proved to be of high educational and social value.

Zambian researchers Matafwali and Chansa-Kabali also reported interesting results in their study of community based Early Childhood Education (ECE) programs in promoting school readiness [21].

## 10. OVOP: good for PNG?

We believe that Papua New Guinea should take a serious look at these studies and evaluate the evidence of their success. The results of the surveys we conducted in the remote communities of the Sandaun, WHP and Morobe reveal heartbreaking lack of educational opportunities for children in those communities. On the societal level this leads to economic dependency. Three to six year-old

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<sup>11</sup> Vitamins and micronutrients support brain development. As we have already stated, iodine deficiency causes mental retardation which is a huge problem in the Highlands of PNG [11; 12].

children in remote mountainous regions of Papua New Guinea would benefit greatly from **bilingual** (English & Tok Ples) **Early Childhood Education**. One Preschool in every Village would enable them to go to school where the village elders would teach them Tok Ples and cultural knowledge, while tech-savvy local youth teachers will play pre-recorded English songs, rhymes, and games (freely available on the Internet), so they would learn English as they play together. This kind of exposure will prepare kids for school – they will be bilingual, entering Grade 1, and so, they will have no problem in understanding their teachers. According to Ms Rose Kemo, the Head Teacher in the UPNG Pre-school, their 3–4-year-old students who come from Rainbow and other Waigani neighborhoods, pick up English within a couple of weeks after they start school (Fig. 4). Learning English during play in preschool will enable all kids (even those from the remote mountainous areas of Papua New Guinea) to learn better right from Grade 1, and to catch up with their urban counterparts, just like the kids in China did. Ultimately, Papua New Guinea would get the quality Human Resources required to free the country from economic dependency.



**Fig. 4. 3–4-year-old children sing English songs and recite poems in the UPNG Preschool during our visit there in April 2022.**

## 11. Conclusions

1. Science cannot be “foreign” – it embodies human knowledge of the physical world we live in; kids learn science through the LOI in the school system (in PNG, it is English).
2. To do well in science, PNG kids must acquire English skills before they begin formal schooling at age 6.
3. Since the OVOP project has been so effective in China, it may be well worth our while to launch a similar intervention here in PNG.
4. Only the native speakers of our indigenous languages can document and describe them, thus saving them from extinction in IDIL 2022-2032. To do that, PNG Universities must produce

expert linguists who speak their Tok Ples. And this can only be achieved through a **bilingual ECE** designed to give kids their “learning tool” (English), as well as their ancestral Tok Ples.

## APPENDIX I

### Formulating and Implementing Education Policy in PNG: a summary of Guy's Ch. 8:

Richard Guy. Ch. 8. Policy Making and Implementation: Studies from Papua New Guinea (ANU 2009)

<p><b>Early policies</b> in education?</p> <p><b>Education pre-Independence:</b> <i>For very few</i></p>	<p><u>Formal education in Papua New Guinea is relatively recent</u></p> <ul style="list-style-type: none"> <li>• <b>1890s</b> – missionaries taught literacy &amp; numeracy (part of evangelization: British policy of ‘pacifying the natives’)</li> <li>• <b>1920s</b> - emphasis on the transformation of ‘the tribe of disappointed warriors into a race of industrious workmen’</li> <li>• <b>1930s</b> - government concern with a blending of cultures</li> <li>• <b>1959</b> – <b>Hasluck</b> (Australian minister for Territories) focus: <ul style="list-style-type: none"> <li>○ <b>universal primary education in English;</b></li> <li>○ church schools encouraged;</li> <li>○ local teacher training;</li> <li>○ technical/manual training at primary schools;</li> <li>○ <b>no secondary education until late 1960s.</b></li> </ul> </li> <li>• <b>1962</b> - <u>UN and World Bank shaped policy through funding projects</u> <ul style="list-style-type: none"> <li>○ 1964: secondary schools to expand; need for a university to satisfy the HR requirements</li> <li>○ <b>1966 - UPNG</b></li> </ul> </li> <li>• <b>Education pre-independence:</b> for the few, gender specific; Western; English; QLD &amp; NSW academic curricula.</li> </ul>
<p><b>1974 – Tololo Committee plan was not approved</b></p>	<p>Tololo plan for <b>1976-1980</b> attempted to address 6 issues in education:</p> <ol style="list-style-type: none"> <li>1. <b>universal primary education</b></li> <li>2. <b>the nature of the curriculum</b></li> <li>3. <b>language of instruction</b></li> <li>4. financing education</li> <li>5. decentralization; and</li> <li>6. <b>development partners</b></li> </ol>
<p><b>1978: National Education Strategy (NES) (1980-1984)</b></p>	<ul style="list-style-type: none"> <li>• ENGLISH = <math>\lambda</math> of instruction; focus on language &amp; basic sciences;</li> <li>• <b>Six NHSs</b> established, but: <ul style="list-style-type: none"> <li>○ &lt; 1% of children completed Grade 12 by the end of the 1980s</li> </ul> </li> </ul>
<p><b>Matane Report (1986)</b></p>	<ul style="list-style-type: none"> <li>• ‘<b>Integral</b> human development’; <b>MT</b> = language of instruction, to preserve PNG cultures and ‘ways of doing things’</li> <li>• <b>1990</b> – PNG signed <b>UNESCO Jomtien Agreement</b> (Education for All)</li> <li>• <b>1991</b> - HR development issue → Education Sector Review: high attrition rates, irrelevant curricula → REFORM</li> </ul>
<p><b>Pivotal role of WB, AUS gov. &amp; UNESCO</b></p>	<ul style="list-style-type: none"> <li>• Devt. partners do not <i>dictate</i> policy in PNG - they drive policy formulation through funding: i.e., in mid-1990s, <b>WB supported only UBE</b> – NO support for tertiary level of education.</li> </ul>

<b>The National Education Plan (1995–2004)</b>	<b>NEP Targets:</b> <ul style="list-style-type: none"> <li>• Integrated activity-based el. program with community inputs</li> <li>• <b>MT literacy</b> by end of E3</li> <li>• VE – ‘bridging’ to English in Grade 3</li> </ul>
<b>VE Reform</b>	Aimed to: <ul style="list-style-type: none"> <li>• improve <b>access, equity, retention</b> and <b>quality</b> at elementary, primary, &amp; secondary levels</li> <li>• cut costs at every level of education</li> </ul>
<b>National Goals &amp; directive principles</b>	<ol style="list-style-type: none"> <li>1. <b>Integral human development</b> - every person to be freed from every form of domination or oppression</li> <li>2. <b>Equality &amp; participation</b> - all citizens to have an equal opportunity to participate in and benefit from the development of our country</li> <li>3. <b>National sovereignty and self-reliance</b> - political &amp; economic independence &amp; self-reliance</li> <li>4. Natural resources &amp; environment - PNG’s natural resources to be used for common benefit</li> <li>5. Papua New Guinea ways: cultural preservation</li> </ol>
	Reform of school system, but lack of reform at the tertiary level (low priority for development partners, and → national gov.)
<b>Education for equality vs Education for Life</b>	2 <sup>nd</sup> reading contrasted two different value positions in PNG education: <ol style="list-style-type: none"> <li>1. <b>Education for equality</b>, which aims to produce competent, competitive, and productive HR for sustainable national development in the context of globalization</li> <li>2. <b>Education for life</b> - developing skills, values and attitudes that anchor students in their communities.</li> </ol>
<b>Summary</b>	<ul style="list-style-type: none"> <li>- Formal education in PNG very recent</li> <li>- Development agencies (WB, UNESCO, Australian Government, etc.) have shaped post-Independence education policy (UBE /MTE) through funding</li> </ul>

## APPENDIX II. Yamari community, Sandaun Province

Members of a remote, rural community in Sandaun Province (autonym: Yamari; tok ples: Yil) participated in survey interviews conducted by a PhD researcher from the University at Buffalo, New York, USA during November 2022. She interviewed 24 adults from 8 of the 19 Yamari hamlets/ villages: Negreibi, Waremulu, Sim, Rawi, Musu, Wublakil, Lalwi, and Pimon. In these interviews, the researcher collected data not only on the adults' experiences, but also for the 66 children those adults collectively have. Table 1 presents a glimpse of the “fully blown national tragedy” on the ground in Sandaun [2]

**Table 1. A short description of the data from the remote communities in the Sandaun Province**

<b>Gender</b> (adult interviewees only, n=24):	
	male – 12 (50%)
	female – 12 (50%)
<b>Age groups</b> in years (n=24):	
	younger than 30: 10 (41.7%)
	between 30 and 50: 9 (37.5%)
	older than 50: 5 (20.8%)

**Age of Onset of learning English (adults only, n=24)**

- learned to *understand* English:
  - Cannot understand English – 2 (8.3%)
  - Before age 6 – 1 (4.2%)
  - Between ages 6 and 9 – 4 (16.7%)
  - After age 9 – 17 (70.8%)
- learned to *speak* English:
  - Cannot speak English – 4 (16.7%)
  - Before age 6 – 0 (0%)
  - Between ages 6 and 9 – 0 (0%)
  - After age 9 – 20 (83.3%)

**Age of Onset of learning English (adults' children only, n=66)**

- learned to *understand* English:
    - Cannot understand English yet – 18\* (27.3%)
    - Before age 6 – 3 (4.5%)
    - Between ages 6 and 9 – 16 (24.2%)
    - After age 9 – 29 (43.9%)
  - learned to *speak* English:
    - Cannot speak English yet – 26\* (39.4%)
    - Before age 6 – 0 (0%)
    - Between ages 6 and 9 – 3 (4.5%)
    - After age 9 – 37 (56.1%)
- \*Note: Of these 18, 15 are under the age of 6.
- \*Note: Of these 26, (a) 15 are under 6 years of age and (b) 5 are between 6 and 9 years old.

**Early Learning Language (ELL)**

- adults only (n=24):
  - Illiterate – 3 (12.5%)
  - Tok Pisin only – 2 (8.3%)
  - English and Tok Pisin – 19 (79.2%)
- adults' children only (n=66):
  - Illiterate (for now) – 21 (31.9%)
  - English only – 2 (3.0%)
  - English and Tok Pisin – 43 (65.2%)

**Education level (adults only, n = 24):**

Primary – 15\* (62.5%)  
 Secondary – 4 (16.7%)  
 College – 5 (20.8%)

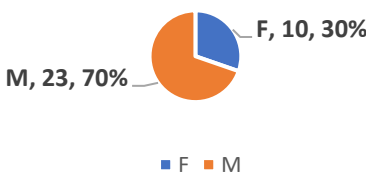
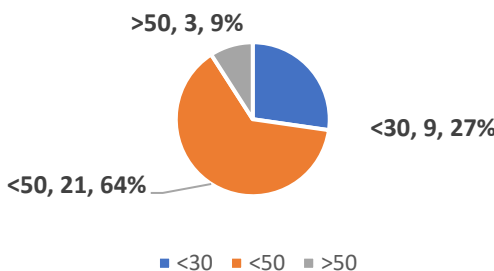
\*Note: Of the 15 with Primary-level education, 1 of the adults aged between 30 and 50 and 2 of the adults aged over 50 had completed Grade 3 or less and all three are also illiterate. 12 adults with at least Grade 4 are indicated as “Primary” level of education.

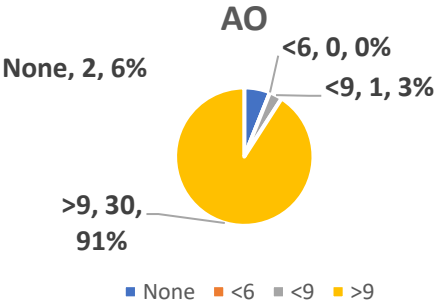
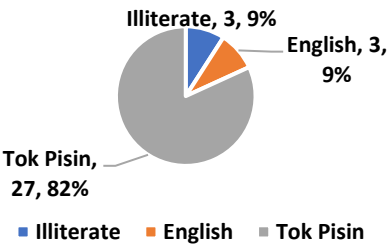
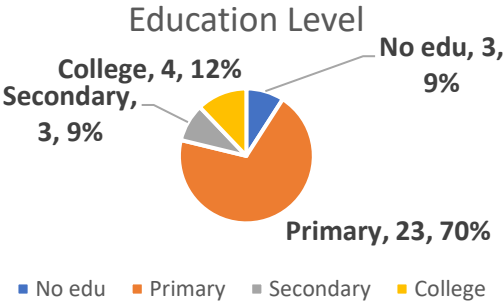
All 24 of the interviewed adults agree that no Yamari children are able to speak English by the time they reach the age of 6 years old, the standard age children should begin schooling in Papua New Guinea. In fact, based on responses from the adults interviewed by the researcher, parents typically do not send their children to school until age 9 or higher. Anecdotal evidence suggests that a general consensus that children in remote/rural Sandaun Province do not speak English by age 6 nor would those 6-year-olds be enrolled in education (for a number of reasons). These statements are supported by the 2022 Grade 8 exam results. A very large majority of this year's Grade 8 exam takers who successfully achieved the minimum score that Sandaun Province sets for a placement to Grade 9 (70% vs the nationally set score of 80%) are aged in their 20s.

## APPENDIX II. SANDAUN YIL COMMUNITIES

The data below was collected in November 2022 by a PhD researcher from the University at Buffalo, New York, USA. She interviewed 33 people from 7 Yil-speaking villages. Table 1 below presents a glimpse of the “fully blown national tragedy” on the ground in Sandaun.

**Table 1. A short description of the data from the remote communities in the Sandaun Province**

<p><b>Gender</b></p> <ul style="list-style-type: none"><li>• Male – 23 (70%)</li><li>• Female – 10 (30%)</li></ul>	<p><b>gender</b></p>  <table><thead><tr><th>Gender</th><th>Count</th><th>Percentage</th></tr></thead><tbody><tr><td>Male (M)</td><td>23</td><td>70%</td></tr><tr><td>Female (F)</td><td>10</td><td>30%</td></tr></tbody></table>	Gender	Count	Percentage	Male (M)	23	70%	Female (F)	10	30%			
Gender	Count	Percentage											
Male (M)	23	70%											
Female (F)	10	30%											
<p><b>Age groups</b></p> <ul style="list-style-type: none"><li>• Younger than 30 years old: 9 (30%)</li><li>• Younger than 50 years old: 21 (64%)</li><li>• Older than 50 years old: 3 (9%)</li></ul>	<p><b>Age groups</b></p>  <table><thead><tr><th>Age Group</th><th>Count</th><th>Percentage</th></tr></thead><tbody><tr><td>&lt;30</td><td>9</td><td>27%</td></tr><tr><td>&lt;50</td><td>21</td><td>64%</td></tr><tr><td>&gt;50</td><td>3</td><td>9%</td></tr></tbody></table>	Age Group	Count	Percentage	<30	9	27%	<50	21	64%	>50	3	9%
Age Group	Count	Percentage											
<30	9	27%											
<50	21	64%											
>50	3	9%											

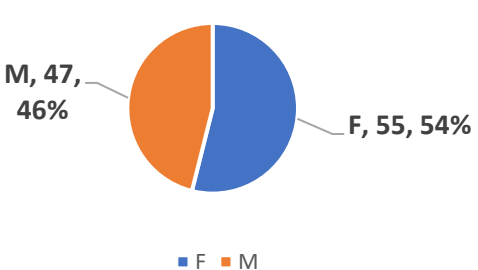
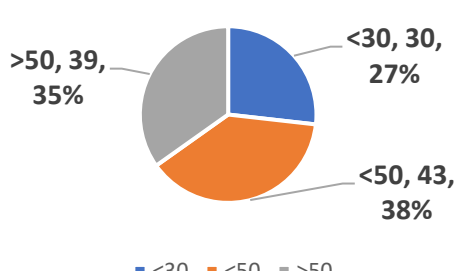
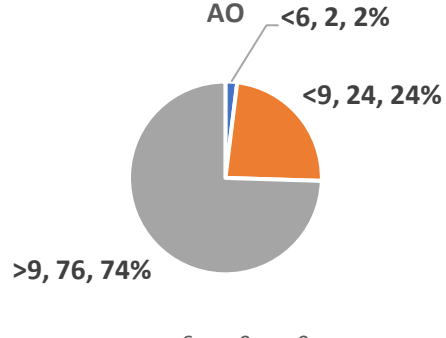
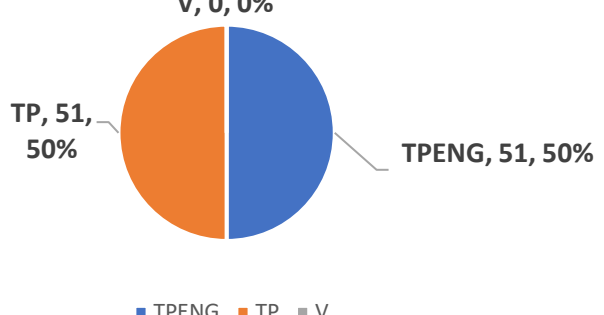
<b>Age of Onset of learning English:</b> <ul style="list-style-type: none"> <li>Do not speak English at all: 2 (6%)</li> <li>None learned English before age 6</li> <li>1 (3%) learned it before age 9</li> <li>91% learned English after age 9</li> </ul>	<p style="text-align: center;"><b>AO</b></p>  <p>None, 2, 6%      &lt;6, 0, 0%      &lt;9, 1, 3%      &gt;9, 30, 91%</p> <p>■ None ■ &lt;6 ■ &lt;9 ■ &gt;9</p>
<b>Early Learning Language (ELL)</b> <ul style="list-style-type: none"> <li>Illiterate: 3 (9%)</li> <li>Tok Pisin + English: 3 (9%)</li> <li>Tok Pisin: 27 (82%)</li> </ul>	<p style="text-align: center;"><b>ELL</b></p>  <p>Illiterate, 3, 9%      English, 3, 9%      Tok Pisin, 27, 82%</p> <p>■ Illiterate ■ English ■ Tok Pisin</p>
<b>Education level:</b> <ul style="list-style-type: none"> <li>Primary (incomplete)</li> <li>Secondary (incomplete)</li> <li>3. College</li> </ul>	<p style="text-align: center;"><b>Education Level</b></p>  <p>College, 4, 12%      No edu, 3, 9%      Secondary, 3, 9%      Primary, 23, 70%</p> <p>■ No edu ■ Primary ■ Secondary ■ College</p>

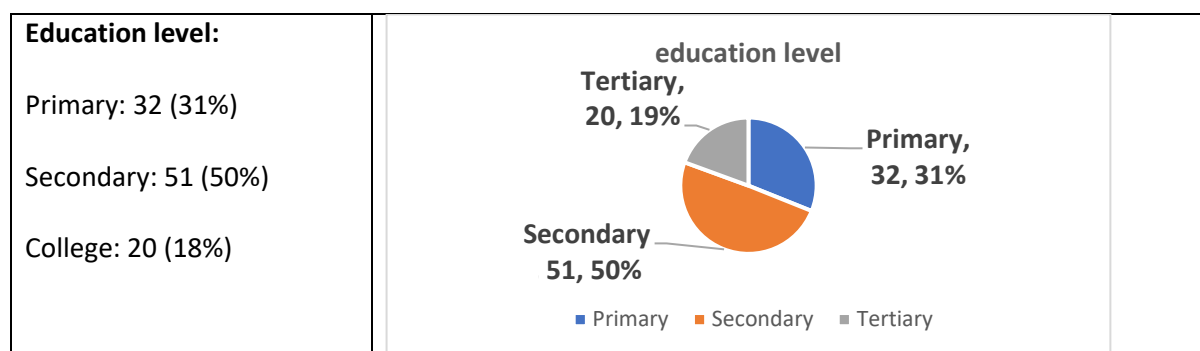
No child in any of these villages (Abseim, Lakwi, Musu, Negreibi, Rawi, Sim, Waremulu, or Wublakil) speaks English by the time they reach school age (age 6). According to the researcher, the parents typically don't send their kids to school before they reach the age of 12.

### APPENDIX III. WESTERN HIGHLANDS PROVINCE

The data below was collected in November 2022 by a graduating Linguistics student from SHSS UPNG. She interviewed 102 people from Melpa-speaking villages near Mt. Hagen, WHP (Western Highlands Province). Table 2 below presents the situation on the ground in rural WHS.

**Table 2. A short description of the data from the remote communities in WHP, PNG.**

<b>Gender</b> <ul style="list-style-type: none"> <li>Male: 47 (46%)</li> <li>Female – 55 (54%)</li> </ul>	<p style="text-align: center;"><b>Gender</b></p>  <p style="text-align: center;">■ F ■ M</p>
<b>Age groups</b> <ul style="list-style-type: none"> <li>Younger than 30 years old: 30 (27%)</li> <li>Younger than 50 years old: 43 (38%)</li> <li>Older than 50 years old: 39 (35%)</li> </ul>	<p style="text-align: center;"><b>Age groups</b></p>  <p style="text-align: center;">■ &lt;30 ■ &lt;50 ■ &gt;50</p>
<b>Age of Onset of learning English:</b> <ul style="list-style-type: none"> <li>Before age 6: 2 (2%)</li> <li>Before age 9: 24 (24%)</li> <li>After age 9: 76 (74%)</li> </ul>	<p style="text-align: center;"><b>AO</b></p>  <p style="text-align: center;">■ &lt;6 ■ &lt;9 ■ &gt;9</p>
<b>Early Learning Language (ELL)</b> <ul style="list-style-type: none"> <li>Tok Pisin + English: 51 (50%)</li> <li>Tok Pisin: 51 (50%)</li> <li>Melpa: 0 (0%)</li> </ul>	<p style="text-align: center;"><b>ELL</b></p>  <p style="text-align: center;">■ TPENG ■ TP ■ V</p>

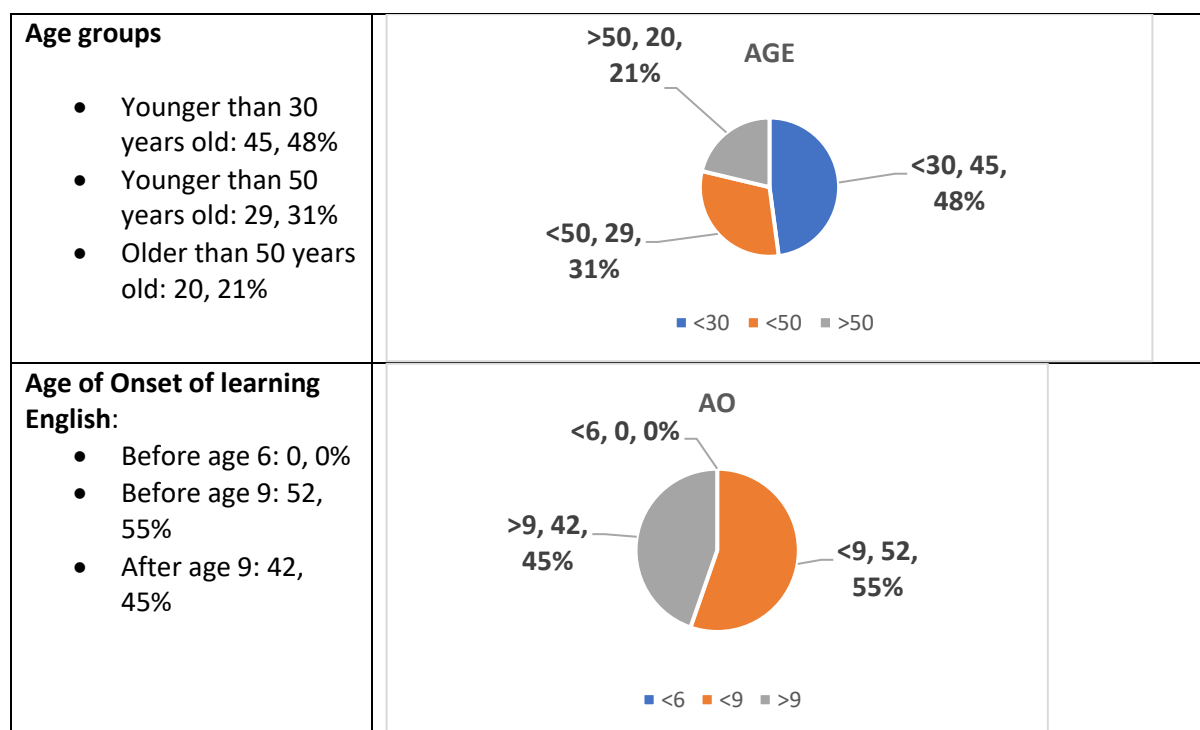


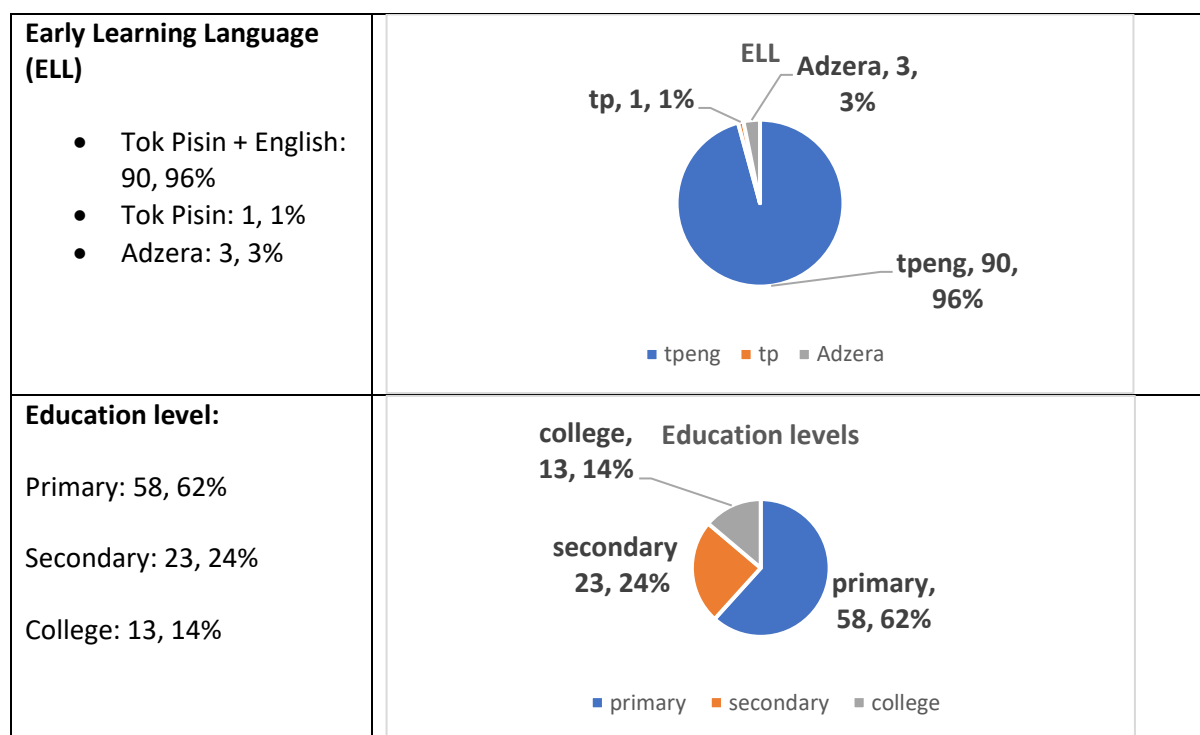
Only 2 children in Balg spoke English by the time they reach school age (age 6).

#### APPENDIX IV. MOROBE

The data below was collected in November 2022 by a graduating Linguistics student from SHSS UPNG. She interviewed 94 people from Adzera-speaking villages near Lae, Morobe. Table 3 below presents the situation on the ground in rural Morobe.

**Table 3. A short description of the data from the remote communities in Morobe, PNG.**





No children were reported to speak English before the age of 6 (the age that children are supposed to go to school in Papua New Guinea. This shows that children are not prepared for school – they do not have the skills they need, in order to learn in school.

#### APPENDIX V. General Information about Elementary Schools in the Zia area, Morobe

Sakarepe Kamene, Linguistics Department SHSS UPNG

November, 2022

There are **13 Zia speaking villages in the Zia area**: the population is 12, 000 people; mode instruction appears to be TokPisin, Zia and English in that order; there is sporadic use of English in school periods and most times, children use Zia, the Tokples; English is rarely used in school in villages where children come from.

1. **Seven villages along the Waria River Basin** and these include Dona, Saigara, Ainse, Zare, Putaera, Siu and Popoe

All villages have their own Elementary Schools; some have permanent buildings while others have bush material buildings; but all appear to be well kept and managed.

- **Dona** Elementary has a permanent building, fully furnished with chairs and tables; there are two teaches; both with Grade certificates
- **Saigara** has one permanent double classroom; fully stocked with chairs and desks; there 3 teachers with Grade 10 certificates
- **Ainse** has a permanent double classroom with chairs and tables; about four teaches – all are Grade 10 School Leavers.

- **Zare** has one permanent double classroom with chairs and desks – has four teaches and all are Grade 10 School Leavers
- **Putatera** has one bush material building with desks – two teaches who are Grade 10 leavers
- **Siu** has one bush material building with desks – two teaches with Grade 10 certificates
- **Popoe** has one permanent building with desks - two teachers with Grade 10 certificates

There is one Primary School – Zare-Ainse Primary School that starts at Grades 3 to 8 and services children that come from the seven villages along the Waria River Basin

2. **Another set of five villages are spread along the coastal fringes of the Hercules Bay of the Solomon Sea** and these are:

- **Kobo** has its own bush material Elementary School with desks – two teachers with Grade 10 certificates
- **Waingsoduna** has a bush material building with desks – one teacher with Grade 10 certificate
- **Eu** has own bush material Elementary School – two teachers with Grade 10 certificates
- **Bau** has its own permanent classroom- three teachers with Grade 10 certificates
- **Sowara** has own bush material Classroom – one teacher with Grade 10 certificate

The **Eu Primary School** starts from Grades 3-6, which takes in students mostly from the Elementary Schools along the coastal fringes of the Solomon Sea.

3. Recently the National Department of Education has sent out the circular to all Elementary School Teachers to go for further training to up-grade their qualifications to Grade 12 to be **permitted and be paid at the Elementary level**. This is happening because of the new policy structure to include Early Childhood Education in the National education system of Papua New Guinea.
4. The changes require all instructions to be in English right from the start. This means all teachers must also be competent in the English language. This is a problem and more work is required at this level to improve teachers' level of English.
5. Teaching materials, aids and resources still remain a huge challenge: more attention is needed in this area.
6. Teachers lack close supervision; this is because school inspectors do not pay regular visits to schools in remote rural areas to monitor the quality of education. Regular communication between the National DOE (Department of Education) and the Provincial and District educational offices could minimize the communication deficit and improve the situation at this level.
7. From this general information it is evident the school infrastructure is there already. There are schools, teachers, parents, as well as citizen groups and School Boards of Management are there. What is needed, however, is to provide more assistance in terms of teacher training, to add value to education of the little ones.
8. Nutrition should also be considered and promoted to help grow the mental capacity of school children.
9. More awareness is needed to change the attitude and mindset of the parents to encourage more girls to attend and remain in school until they complete the required Grade 12.

This is but some general information about Elementary Schools in the Zia area.

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