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The motif on the cover is based on a nineteenth century carving of a ship's prow from Choiseul, Solomon Islands. To *Directions: Journal of Education Studies*, it signifies forward movement.

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Dedication

This volume is dedicated to the late Ambrose Malefoasi whose article is published in this Issue:

“Only a moment you stayed, but what an imprint your footprints have left on our hearts” –Dorothy Ferguson.

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Research Articles

Climate change education: Perception and source of information for agricultural science students in Fiji

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Abstract

A qualitative study was conducted with 100 Year 13 Agricultural Science students to explore their knowledge and perception of Climate Change (CC) and determine various sources from which they obtain CC information. A questionnaire was developed to collect the relevant data from the students. Analysis of the data showed that the majority of the students had a low level of CC knowledge in relation to food production. They also perceived the existing curriculum as moderately effective in teaching them about important CC concepts and appropriately prepare them for food production in the context of CC. The need to review and revise the curriculum was strongly recommended by the students. Mass media was found to be an important medium for learning about CC. Most of the students indicated that they have learnt about CC through mass media rather than formal education. This also denotes a low coverage of CC concepts in the formal Agricultural Science curriculum. This implies appropriate changes to be phased in to strengthen the Agricultural Science curriculum.

Introduction

Climate change (CC) is perceived as one of the most serious global environmental challenges and is certainly the most daunting problem ever faced by mankind (Gerber et al., 2013; Tahu, 2011). The most severe consequences of CC will be felt by small island developing states (SIDS) such as those in the Pacific region. Not only do these countries have a higher share of its assets tied up in natural resources, but they also have limited physical and financial risk mitigation infrastructure in place (Conway & Wilson, 2012). Therefore, CC awareness amongst Pacific Islanders is essential to ensure livelihood continuity in years to come.

Up to date and relevant CC information amongst students would better develop a sense of environmental responsibility amongst them and guide their behavior towards determined ameliorative actions for sustainable living (Bodzin et al., 2014, Rahman et al 2014, Shepardson et al., 2012). With Agriculture being both an abettor and victim of CC, it is imperative that Agricultural Science students are thoroughly educated about CC (Obiora & Madukwe, 2011). This would enable them to make appropriate farm-based decisions and implement relevant mitigation and adaptation agricultural practices for sustainable production.

Exploring students' CC perception is important as it reveals insight about their thinking and understanding of environmental issues. Identification of any misconceptions could contribute towards development of pedagogical materials and teacher education and training programmes aimed at addressing CC illiteracy (Papadimitriou, 2004; Pitpitunge, 2013). Students also play an important role in determining curriculum quality and should be included in decision making (Khan et al. 2019). Considering the importance of CC literacy, a study was conducted to ascertain the level of CC knowledge and understanding amongst Agricultural students in Fiji. The common sources through which Agricultural Science students learn about CC was also explored.

Climate Change Awareness amongst Students

The importance of having students understand the causes and consequences of natural and anthropogenic CC, and to understand the available options to mitigate future anthropogenic drivers

of CC has been heavily emphasized. Being the most important issue facing the society today, it is vital that students learn about CC. Such learning in schools could assist students to better develop their understanding about CC (Rahman et al., 2014; Shealy et al. 2017; Shepardson et al., 2012). Not only they would contribute towards environmental sustainability through appropriate actions, but well-informed students could also become an important medium through which the greater community could be informed and educated about CC. With adequate and appropriate CC knowledge, these students in the future would make correct and contextualised mitigation and adaptation decisions.

The Agricultural contribution towards greenhouse gas (GHG) emission will increase proportionally with the future increase in global population. On the other hand, various aspects of food production would be negatively affected by CC (Yohhanes, 2016). To ensure food security in such situation, food producers need to be well equipped with relevant CC related knowledge and skills. One of the key ways of achieving this is through integration of CC into secondary schools' agricultural science curriculum (Orusha et al., 2012). For education to contribute towards the CC challenges, agricultural science students need to be kept abreast with CC mitigation and adaptation strategies (Chakeredza et al., 2009).

Students Perception of Climate Change

Various studies have been globally conducted to assess students' knowledge and perception of CC. For example, a study conducted in the United States of America (USA) reported that only a relatively few students possess the scientific understanding regarding CC that would enable them to fully participate in society as environmentally literate decision makers (Hestness et al., 2014). Another study conducted in Midwest USA also found a low level of CC knowledge amongst students. None of the participants were able to associate agriculture, waste management and land fill as sources of GHGs and majority of the students did not understand the greenhouse effect or that carbon-dioxide (CO₂) is a greenhouse gas (GHG).

In Hong-Kong, the primary and secondary students are aware that CC is becoming more severe and human activities are the primary cause of CC problems. Students' knowledge about CC, however, was at a low level (Alan, 2013). A poor level of knowledge and comprehension of CC causes, effects, mitigation and adaptation was found amongst high school students in the Philippines. Students also showed limited knowledge on ozone depletion and global warming, climate and weather radiation involved in greenhouse effect (Pitpitunge, 2013). Likewise, a lack of rich conceptualization of CC was also found in a study involving 397 students in Singapore (Chang et al., 2014).

A three-year CC awareness research done in Hyderabad, India, revealed that while junior college students have some knowledge about CC, the majority do not have sufficient knowledge (Poldas & Jain., 2011). Secondary school students in Bangladesh were also found to lack adequate interpretation of global and local CC. The level of misconception and varied CC ideas amongst the students demanded a revision of the formal curriculum (Rahman et al., 2014). Similarly, a moderate level of CC awareness was found in a study conducted on 1200 secondary school students in the western region of Nigeria. The majority of the students did not know the likely cause of CC and did not agree that environmental exploitation can affect climate change (Bello, 2014). A low level of CC awareness was also found amongst senior secondary school students of Abia State in Nigeria (Ezeudu et al. 2016).

An Australian study revealed that a very low percentage of students knew gases beside CO₂ as a GHG (Boon, 2010). Similarly, students of Czech Republic demonstrated an extremely low awareness of CC and the study suggested that such attitude changes could be achieved through prioritizing CC topics

in the school curriculum (Skalik, 2015). Seventeen percent of the students at a secondary school affiliated with a Dar es Salaam University College of Education University in Tanzania indicated that they have learnt about CC from sources apart from school. Students were unable to correctly identify the GHGs, with 25% indicating that they did not know any of the GHGs. A low knowledge of the causes of CC was also exhibited. They however had knowledge of CC effects and CC mitigation and adaptation practices (Carr et al., 2015).

Mass Media and Climate Change Information

Media could play a crucial role in dissemination of useful climate-based information to public. Apart from reporting about CC events and disasters, media also has an important role in influencing personal, national, and international action to address CC. Media portrayals of CC have shaped and affected science and policy discourses as well as public understanding and action (Deepak, 2014; Solomon et al., 2012). While formal education was reported as the main source of CC information in Nigeria, 47% of the students acquired CC knowledge from internet and mass media. Television followed by radio and then newspaper was indicated as the main sources of CC information (Bello, 2014).

Mass media as a greater source of CC information than that of school have been reported in studies conducted in Singapore and Poland (Chang, 2014; Pitpitunge, 2013). Likewise, a large number of students learnt about CC through television when compared to formal education in Greece. The limited preference of school in relation to other information sources stresses the need for an even greater integrated and attractive curriculum with regards to CC (Liarakou et al. 2011). A study conducted by UNICEF in eight Montenegrin municipalities' secondary schools also revealed that mass media along with school play important roles in educating and raising the awareness on global warming, which is an aspect of CC. In fact, more students learnt about global warming from TV than school (UNICEF, 2011).

Television, followed by newspaper and then internet was found as the mass media sources from which students acquire CC information in India (Deepak, 2014). Even in developed countries such as Japan, television and newspapers are used as primary sources of CC information (Sampei & Aoyagi-Usui, 2009). Several limitations have also been cited when it comes to mass media being used as a source of CC information. According to Apple (2007) and Hallar et al. (2011), media as a source of CC is unreliable and often presents a simplistic and inaccurate picture of CC amongst students. The role of mass media in raising awareness of global warming was also identified as temporary with people most likely not retaining such information for long-term purposes (Bello, 2014).

Study Context

In the face of CC, Pacific Small Island Developing States (PSIDs) are highly susceptible to natural disasters, due to high potential exposure to extreme weather conditions and low adaptive capacity. PSIDs, including Fiji, greatly depend on Agriculture- the most climate sensitive components of the economic sector, for their daily socio-economic stability and development (Barnett & Campbell, 2010; Morrow & Bowen, 2014; Nurse et al. 2014). With the declining land availability due to sea level rise and salinization, changing rain fall pattern and increasing pest and disease infestation, the local food production capacity is surely to be negatively affected. To ensure continuity of local food supply, it is imperative that farmers are equipped with the necessary knowledge and skills to adapt to CC and sustainable food production.

Fiji's education response to CC formally was recognized in the edited 2012 National Climate Change Policy, which stated that widespread education on CC is critical for Fiji to cope with the impacts of CC. The endorsement of the Policy also made the inclusion of Climate Change Education (CCE) into the existing curricula mandatory. The Ministry of Education, Heritage and Arts (MEHA), in collaboration with the United Nations Framework Convention on Climate Change (UNFCCC), developed a framework to integrate CC and disaster risk reduction information into the current school curriculum (UNFCCC, 2014). The existing curriculum was audited, and the CC and Disaster Risk Management (DRM) topics were incorporated in the Basic Science and Social Science syllabi for Years 1 and 2, and all syllabi for Years 3 to 13. In 2017, the 5- and 20-year national development plan further advised that the curriculum in Fiji to be continually reviewed and strengthened to achieve its national objectives, including those associated with CC (Sayed-Khaiyum, 2017).

With such an inclusion in the formal curricula, it is anticipated that students are well versed with CC contents especially in terms of its definition, causes and mitigation and adaptation practices. A number of studies conducted globally did find that CC is yet to be meaningfully integrated in the formal education curriculum (Kariuki, 2017; Mutiso et al., 2014). Due to the relationship between CC and food production, Agricultural Science students need to be well acquainted with CC concepts. The secondary school curricula should lay the foundation upon which higher education would be built. Further, Agricultural Science should aim to provide students with the appropriate knowledge and skills for self-employment. In such circumstances, Agricultural Science curricula should be highly inclusive of CC concepts, and Agricultural Science students should have the essential knowledge about CC in relation to food production.

Purpose of the Study

The study was undertaken to assess the perception of students towards CC. This would reflect the amount of CC knowledge and skills possessed by them, which would be used to establish how effective the secondary school curricula is in teaching students the fundamentals of CC. The various sources through which students acquire CC were also determined. The status of formal curricula relating to CC, in comparison to other sources, was also established.

Significance of the Study

This study is an attempt to assess the effectiveness of a formal secondary school curricula in teaching CC to its students in Fiji. The perception and knowledge of students were used to infer how well Agricultural Science curriculum deliver CC concepts to its students. The findings of the study could be used as a platform to review and redesign the Agricultural Science curriculum to include relevant topics in CC. A well-designed secondary school curriculum can become an integral part of the concerted efforts to tackle CC through sustainable agriculture to reduce its own gas emissions, enhancing the carbon sink function of agricultural soil and contribute to production of renewable energies and bio-products (Mutiso et al. 2014).

This study would further evaluate and make comparison between formal education and mass media as source of CC information. Finally, the study would also lead the pathway for similar investigations in other secondary school subject areas. Different subjects connect with CC differently and each need to provide contextualized, subject specific CC knowledge, and avoid mere replication of information. Subject-based studies would provide vital information needed to upgrade and make different subjects to be CC inclusive in their own ways.

Methodology

A total of 100 Year 13 Agricultural Science students from 11 secondary school in the district of Labasa, Fiji Islands, participated in the study. Purposive sampling method was used to select the 11 secondary schools for the study. Purposive sampling strategies are non-random ways of ensuring that particular categories of cases within the sampling universe (population) are represented in the final sample (Robinson, 2014).

Questionnaire was used as the research tool to gather data from the students. The questionnaire itself comprised of 3 parts. The initial section sought demographical information from the participants and consisted of dichotomous and multiple-choice nominal questions. The CC perception and knowledge of the participants was investigated in the second part of the questionnaire, using Likert scale closed questions, and open-ended questions. In the final section, students view on the curriculum preparing them for real life was sought, once again using Likert scale and open-ended questions.

Coding, thematic identification and quantitative analysis were employed for treatment of the data collected. Quantitative method of data analysis can be of great value when attempting to draw meaningful results from a large body of qualitative data (Abeyasekera, 2000). The main quantitative method involved calculating the frequency of the responses received. Main themes portrayed through the open-ended questions were also identified.

The ethical consideration for the study was informed and guided by the University of the South Pacific (USP) and the Ministry of Education, Heritage and Arts (MEHA) Fiji Islands research standards. All the necessary research ethical and obligations were fulfilled. Written permissions were sought from the MEHA and parents for involving students in the study. All information gathered were treated with absolute confidentiality and was used only for the purpose of the study.

Study Finding

Demographic Distribution

The gender and the ethnicity of the student participants are presented in the table below:

Table 1.0 Gender and ethnicity of students participating in the study

Gender		Ethnicity		
Male	Female	Indian	I-Taukei	Others
n= 38 (38%)	n= 62 (62%)	n=38 (38%)	n= (62) (62%)	n=0 (0%)

Fundamental CC Knowledge

Of all the student participants, 98% (n=98) agreed that CC is a serious local problem. The remaining 2% (n=2) indicated that they are not sure whether CC is a problem or not. None of the students disagreed to CC being a problem.

Understanding of the Term CC

An open-ended question in the questionnaire required the participants to state what they understood by the term CC. Majority of the student's provided responses that could be accepted as the definition of CC for a Year 13 student. The most common responses were:

change in weather pattern due to global warming (FS2S8)

change in weather pattern over a period of time due to the rise in earth's temperature as a result of excess build-up of CO₂ in the atmosphere (FS3S1)

Some of the participants also provided detailed responses such as:

significant and lasting changes in the statistical distribution of weather pattern over period ranging from decades to millions of years (FS6S12)

Some of the students associated CC with change in temperature only and provided responses which only mentioned change in temperature as their understanding of CC. Examples:

change in atmospheric temperature (FS5S3)

change in atmospheric temperature due to increase in the use of CH₄ and use of CFC (FS12S3)

Common Gases Causing CC

Carbon dioxide (CO₂), carbonmonooxide (CO), methane (CH₄) and chluroflurocarbon (CFC) were the most common gases indicated by the participants as the gases responsible for causing CC. Names of gases such as Nitrogen Oxide (N₂O) and Sulphur Oxide (SO₂) as causes of CC were also provided by many along with responses such as halon, methychloroform, hydroflurocarbon and sulphric acid. Some of the students provided very general causes of CC such as fossil fuel, burning flame and factories emission. One of the participants did state Oxygen (O₂) as a cause of CC.

Meaning of Mitigation, Adaptation and Anthropogenic

Mitigation, adaptation and anthropogenic are common terms associated with CC. Only 25% (n=25) of the students indicated that they knew the meaning of these terms while 75% (n=75) indicated otherwise. Of the 25% (n=25), only 19% (n=19) students defined mitigation, 10% (n=10) defined adaptation and only 2% (n=2) participant tried defining the word anthropogenic. Of the 19 responses to the definition of Mitigation, 16 could be considered correct.

Some of the definitions provided for the word mitigation were not relevant to CC at all. For instance, the definition provided as "it deals with movement of people due to CC". (MS3S3)

Some unrealistic definitions for Adaptation were also received from the participants. For instance:

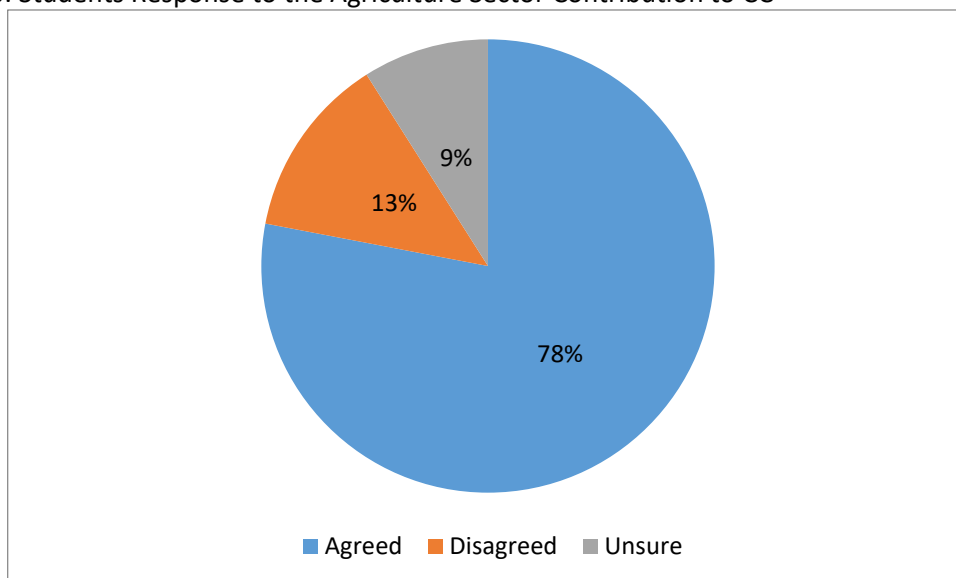
*book or play that is based on a particular piece of work
is the animals and humans are adapting in to new environment due to CC
(MS2S10)*

Only two students attempted to define Anthropogenic and surprising, both had the same response, which were wrong. The responses were "is the study of human and what they do" (FS3S10)

Contribution of the Agriculture Sector to CC

Of the total students participating, 78 % (n=78) agreed that agricultural activities contribute towards CC. Thirteen percent (n=13) disagreed while 9% (n=9) were not sure whether Agriculture contributes towards CC or not.

Figure 1.0: Students Response to the Agriculture Sector Contribution to CC

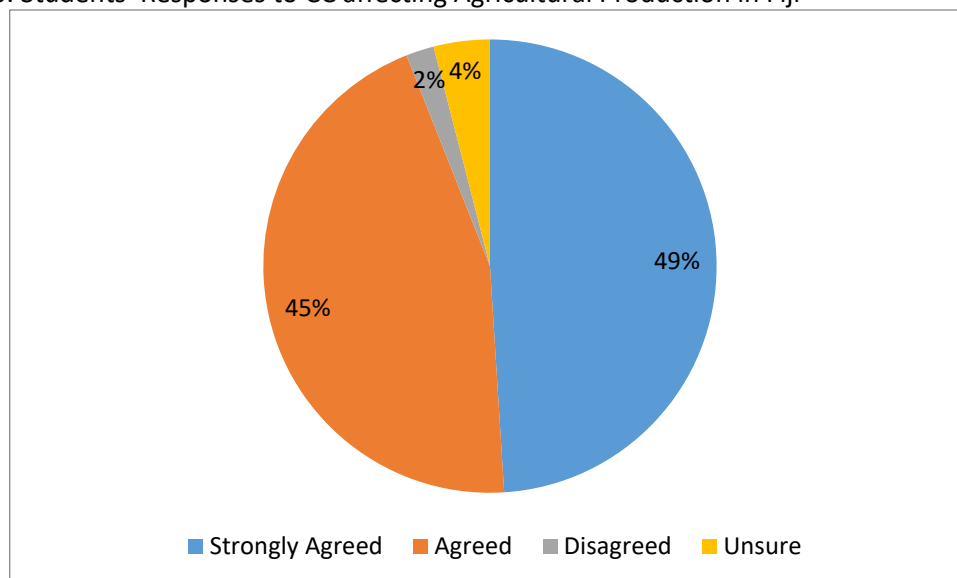


The students were further asked to state how agriculture contributes towards CC. A total of 53% (n=53) of participants attempted this question, providing deforestation, burning of forest and use of machines as common agricultural causes. Only 3% (n=3) students indicated livestock farming as a source of CH₄ and contributor to CC. Burning of sugarcane residues, use of fossil fuels and CFC and use of fertilizers and chemicals were also some of the agricultural causes of CC indicated by the students. Some of the students provided answers that were totally incorrect, demonstrating an absence of CC knowledge amongst them.

None of the students stated wet land farming and/ or use of nitrogenous fertilizers as cause of CC.

To further assess the level of CC understanding amongst the students, students' knowledge of the relationship between CC and Agricultural production was investigated. The responses obtained are presented in the following graph:

Figure 2.0: Students' Responses to CC affecting Agricultural Production in Fiji

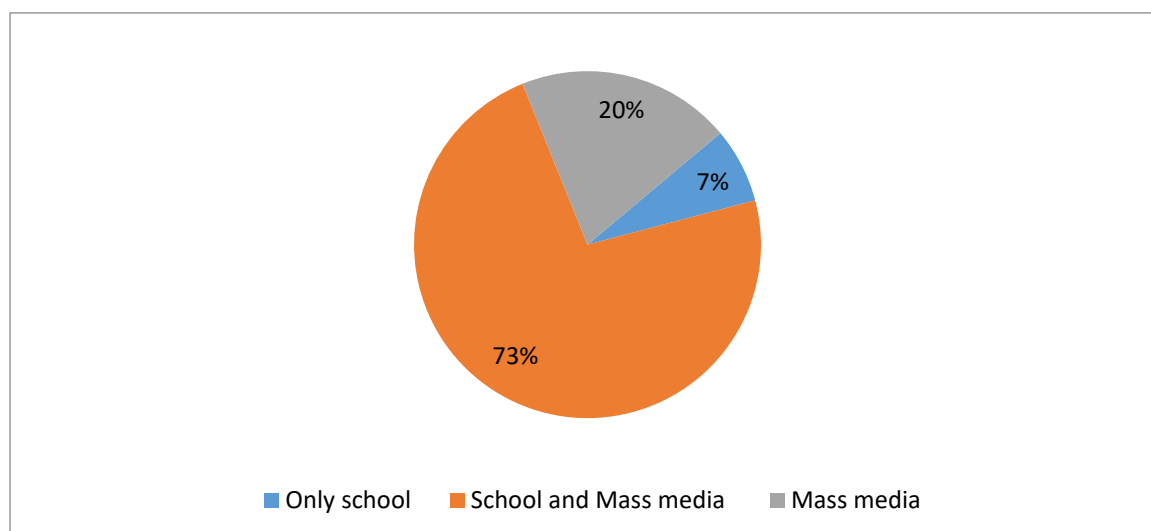


Of the total participating students, 49% (n=49) strongly agreed that the agriculture production in Fiji is affected by CC. Forty-five percent (n=45) agreed to the concept, 2% (n=2) disagreed while 4% (n=4) were not sure if change in climate has any effect on the agricultural production in Fiji.

Source of Knowledge about CC

Academic subjects offered in schools and mass media (television, radio, newspaper and internet) were common sources, and played an important role in informing and educating the students about CC.

Figure 3.0: Sources from which students obtain information about CC



Seventy-three percent (n=73) of the students learnt about CC from both formal education (school) and mass media. Seven percent (n=7) of the students learnt about CC only from formal education while 20% (n=20) of the participant learnt about CC only through mass media (TV, radio, newspaper and internet) and not through any formal subjects offered in the school system. Television was

identified as the most important mass media source in informing about CC, followed by the internet and radio.

Information of the different subjects from which Year 13 students learnt about CC was also obtained through the study and is presented in the table below:

Table 2.0 -Subjects from which students learn about CC

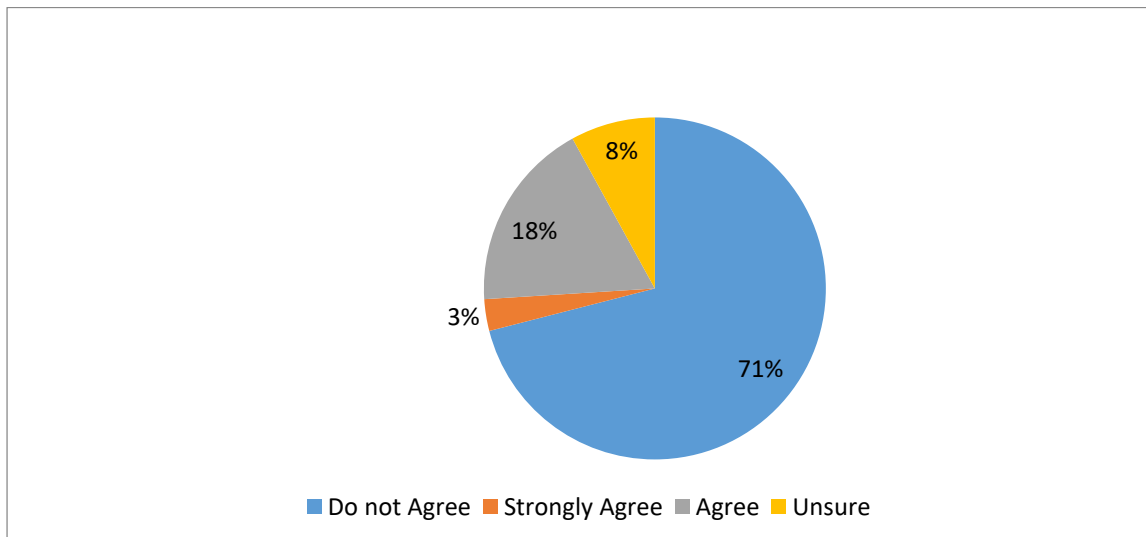
Subject	Percentage
Agricultural Science	26
Non-Agricultural Science Subjects	28
Both Agricultural and Non-Agricultural Science Subjects	46

Twenty-six percent (n=26) of the participants indicated learning about CC from the subject of Agricultural Science while 28% (n=28) indicated non-agricultural subjects as their source of CC knowledge. Forty-six percent (n=46) of the students indicated that they learnt about CC from Agricultural Science and from subjects apart from Agricultural Science. Biology and Chemistry were commonly provided as the non-agriculture subject that deals with CC concepts in Secondary Schools. Several students also mentioned Geography and English as subjects teaching them about CC.

Agricultural Science Curriculum

The effectiveness of the Agricultural Science curriculum in teaching and preparing students about CC was evaluated through the students' point of views. The feedback obtained is presented in the following graph:

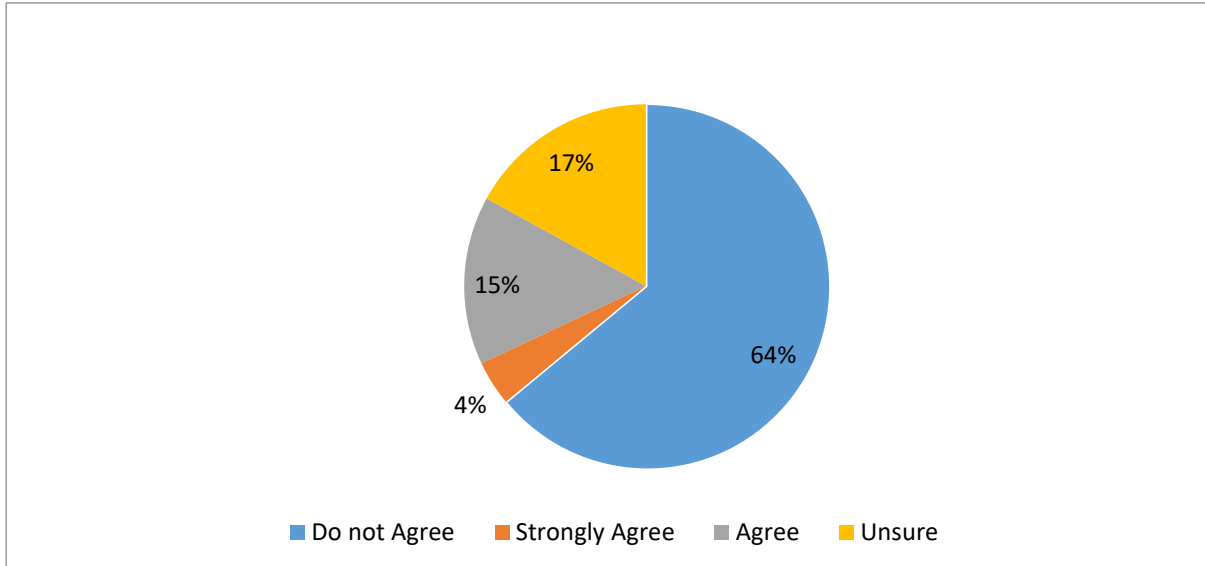
Figure 4.0 Agricultural Science Curriculum and CC Teaching



Seventy-one percent (n=71) of the students did not agree that the Agricultural Science curriculum used in Fiji's Secondary School effectively teaches about CC and its relationship with Agriculture. Three

percent (n=3) strongly agreed while 18% (n=18) agreed that the curriculum is efficient in teaching about CC. Eight percent (n=8) of the participants were not sure whether the curriculum teaches about CC or not.

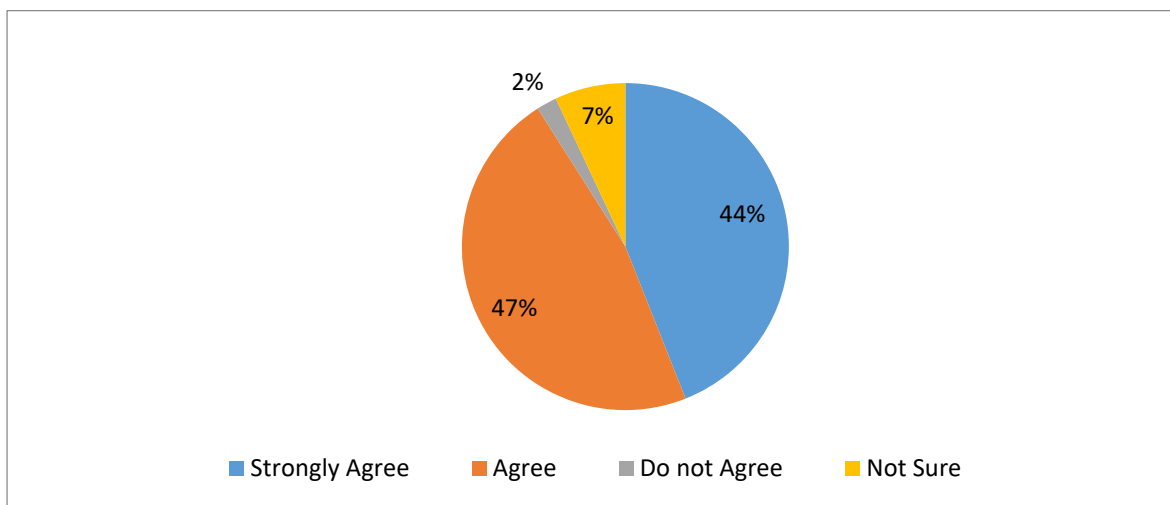
Figure 5.0 Agricultural Science Curriculum and CC Preparedness



A total of 64 % (n=64) of the participants indicated that the Agricultural Science curriculum has not adequately educated and trained them to deal with CC in relation to food production. Only 4% (n=4) of the students strongly agreed while 15% (n=15) indicated that they agree to the concept. Seventeen percent (n=17) of the participants were not sure whether they have been adequately prepared by the Agricultural Science curriculum to deal with CC in their future career.

Students view on the need for curricular revision is presented in the following graph:

Figure 6.0 Agriculture Science Curriculum Review



A total of 44% (n=44) of the participants strongly agreed while 47% (n=47) agreed that there is a need to revise the Agriculture Science curriculum to make it more CC inclusive. Only 2% (n=2) of the participants indicated that there is no need to change the curriculum while 7% (n=7) were not sure if the current curriculum needs to be revised to incorporate CC concepts.

Discussion

The fundamental purpose of the study was to determine CC perception, and its sources of information amongst Agricultural Science students in Fiji. This was one of the pioneer studies conducted with the aim of assessing the effectiveness of the Agricultural Science curriculum in Fiji through the perspective of the students, the very stakeholder for whom any curriculum is designed and delivered.

Students Perception and Knowledge on CC

Almost all participating students did agree that CC is a serious local problem. This finding is in tandem with findings of the study conducted by Alan (2013) where students were able to identify CC as a major problem. The majority of the students were also able to provide satisfactory definition of the term CC, with change in weather pattern, change in temperature as being the common definition. However, most were not able to provide the names of at least three GHGs. A lack of GHG knowledge amongst students has also been reported by studies conducted by Boon (2010) and Carr et al. (2015). The majority of the students also failed to correctly define the terms *mitigation*, *adaptation* and *anthropogenic*. This denotes a lack of in-depth knowledge about CC, and the common terms associated with it. These terms are commonly used in literatures related to food production, and a lack of understanding by farmers may prevent them from implementing the best mitigation and adaptation practices. The curriculum has failed to teach important terminologies associated with CC.

A reasonable number of students (22%) either did not agree or were not sure that Agriculture contributes towards CC (Figure 1.0). These are students who have been taking Agricultural Science for at least the past 4 years. Being unaware and/or unsure that Agriculture is one of the contributors of CC reveals low level of CC knowledge amongst students, and also implies the inefficiency of the Agricultural Science curriculum in teaching about CC in relation to food production. Study conducted by Shepardson et al., (2012) also found students failing to associate agriculture as a GHGs source. The agricultural sector's contributions toward CC need to be known and appreciated by the students of Agricultural Science to implement appropriate mitigation strategies.

Slightly more than half of the participating students (53%) were able to relate how agriculture contributes towards CC. Deforestation, forest burning, and use of machines were the common agricultural causes of CC indicated by the students. Very few students indicated livestock farming and none stated wet land farming as agricultural CC causes. Livestock production is a topic that is covered at all levels of the curriculum, yet the curriculum has failed to teach and associate livestock with CC. Wet land rice farming is an intensively practiced venture in Fiji. Yet none of the students were able to relate wet land rice farming to CC. The majority of the students agreed that agriculture production in Fiji is affected by CC (Figure 2.0). This reveals that students are aware of the possible impacts of CC on food production. The findings of the present study agree with the findings of the study conducted by Boon (2010) where students were able to state the possible impacts of CC.

Source of Student's CC Information

Mass media, in addition to other subjects, were stated as important sources of information about CC by the students. The role of mass media was acknowledged by the students as an important source of

CC information. The study found that only a small proportion of the students (7%) learnt about CC solely from school (formal education). The majority of the students (73%) indicated learning about CC from both school and mass media (Figure 3.0). Mass media complementing formal education as a source of CC information for students was also found in the studies conducted by Boon (2010), Bello (2014) and Deepak (2014). A fifth of the participating students (20%) further indicated that they have acquired CC knowledge solely from mass media sources, and not from formal education. Student learning about CC only from mass media and not from formal education was also reported by a study conducted by Boon (2010).

When comparing mass media and education as the sole source of information, more students learnt about CC from mass media. This finding agrees with studies conducted by UNICEF (2011) and Liarakau et al. (2011) where mass media dominated formal education as the source of CC information for students. Weak representation of CC in the formal education system and technological advancement and access could be the reasons for mass media being the dominant source of CC information amongst students. Easier and better access to technology could be another possible reason for more students learning about CC from mass media than formal education. As CC is an important environmental issue, it is highly likely that news related to it frequently appears in media.

Television, followed by the newspaper was identified as the most important mass media sources of CC. Radio was found to be the least efficient medium in informing students about CC. This finding agrees with the findings of studies conducted by Bello (2014), Deepak (2014) and Liarakou et al. (2011) whereby television was found as the most common source of mass media informant about CC amongst students. Despite being in the formal education system for the past 13 years, a large number of students learning about CC solely from mass media and not from the education system is indeed an issue of concern. This reflects the deficiency of appropriate CC concepts in the Agricultural Science curriculum.

Of the total students participating in the study, a significant proportion (28%) indicated that they have learnt about CC from subjects apart from Agricultural Science (Table 2.0). Agricultural Science students learning about CC from other subjects justifies that there is a need to include a higher degree of integration and organization of CC concepts in the Agricultural Science curriculum. According to the students, Biology, Chemistry, Geography and English are the subjects that deal with CC concepts at the secondary school level. While these subjects may provide students with CC knowledge, the possibility of the content taught being linked to food production would be very low. As mentioned earlier, each subject would present CC in its own perspective. Agriculturalists need to know and understand CC from a food producers' point of view, and this would be best done by integrating CC in the Agricultural Science curricula.

Students Perception of the curriculum

The majority of the student participants (71%) indicated that the Agricultural Science curriculum used in Fiji's secondary school failed to adequately teach them about CC and its relationship with agriculture production (Figure 4.0). The majority of the students also indicated that curriculum has not adequately prepared and trained them to deal with CC for future agricultural related careers and recommended for a curriculum review to make it more CC inclusive (Figure 5.0 & 6.0). The perception of the students towards the Agricultural Science curriculum in the present study is consistent with findings of the study conducted by Kariuki (2017) where students regarded the agriculture curriculum as poor in teaching them about CC.

Conclusion and Implications

Based on the findings of this study, it could be inferred that CC knowledge amongst Agricultural Science students in Fiji may not be adequate for them to make CC based decision and implementations. Most of the students were unable to provide relevant definitions of terms associated with CC. While the majority of the students did appreciate CC as a serious problem, a reasonable number of them were unable to relate CC with agriculture. Most of the students also had limited knowledge as how agriculture contributes towards CC, with contribution from the livestock sector and wet land rice farming almost unknown to them. There is a high possibility that these Agricultural Science students would be engaged in some sort of agriculture related profession in the future. They could be working for institutions such as the Ministry of Agriculture, commercial farms or have their own farms operating at commercial or semi commercial scale. With the current scenario, the majority of them would be working with very limited CC knowledge and skills in relation to food production. Regardless of the level of contribution, the impact of CC on food production capacity of the Pacific would be great. Farmers need to be well equipped with the various adaptation techniques. At the same time, formal agricultural institutions need to carry out research for relevant mitigation and adaptation practices. Secondary education is the platform where the fundamental knowledge about CC needs to be laid through appropriate inclusion in the curriculum.

Mass media was found to play an important role in imparting CC information to the students. As a matter of fact, more students were found to learn about CC from mass media as compared to formal education. This is something to think about as students devote a greater amount of their time in a formal education surrounding when compared to the amount of time devoted towards mass media components such as watching television, reading newspapers, and listening to the radio. More students knowing about CC from mass media rather than formal education simply implies a lack of appropriate CC coverage in the formal curriculum and consequently a lack of knowledge amongst the students. The Agricultural Science curriculum was perceived by the students as weak in teaching, training and preparing them to do food production in a changing climate. The majority of the students also highly recommended the curriculum to be reviewed and revised to make it more CC inclusive.

The perception and knowledge of a concept amongst students, and the source from where they sought information related to it reflects the effectiveness of the curriculum delivering the concept. Based on the data received, it could be concluded that the current Agricultural Science curriculum falls short in adequately teaching its students about CC, and there is a need to review and integrate a higher degree of CC concept in the existing Agricultural Science curriculum. Such a review needs to be done in a pragmatic way, involving expertise who are well versed with the concepts of CC in relation to agriculture. Teachers, farmers, officials from the Ministry of Agriculture and other institutions such as Secretariat of the Pacific Community (SPC) should form an integral part of this forum. This would ensure that the curriculum is relevant and highly contextualised to the local situation.

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Education decentralisation: The case of public participation theory in the delivery of education services to schools in the Solomon Islands

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Abstract

In any education system, the effectiveness, efficiency and quality of delivery of education services is fundamental. In the Solomon Islands, while a national Ministry is responsible for setting the overall policy and regulatory framework, education services are expected to be delivered by provincial governments and non-governmental Education Authorities (EA). This paper discusses the findings of a study conducted in the Solomon Islands in 2020 exploring the effectiveness and efficiency of EAs in the delivery of services to schools. The study was guided by the value of the public participation theory (PPT), as a potential tool to be used by the EA in the delivery of services such as education (Naidoo, 2017). The study used an explanatory, sequential mixed method approach and employed qualitative methods. These were semi-structured interviews with EA leaders and school leaders to provide rich qualitative data on EA experiences in the delivery of education services. This paper discusses four areas for EAs to consider making more explicit in their practice to improve their effectiveness and efficiency. The potential value of the PPT framework as a practical tool for exploring EA activity was justified.

Introduction

Education and development are intertwined. For many Pacific countries, education is a fundamental vehicle for development and advancement. In development, a key indicator of the state of development is the effectiveness and efficiency of education services delivery. This article centres on public participation theory (PPT) as a lens for examining how to improve efficiency and effectiveness in a partially decentralised environment, such as the education sector in the Solomon Islands. It considers first, some of the challenges and problems experienced by decentralised Education Authorities (EAs) in delivering education services to schools effectively and efficiently and goes on to suggest areas where improvements could be made. It is important to note that there are many definitions of 'services' (Fitzsimmons & Sullivan, 1982) but, in general, a service is not a physical, consumable product; rather it involves action, process and performance - services are for people and provided by people. Service delivery, therefore, is the provision of this 'people product' by the government to the community for which it was promised (Naidoo, 2017). Hence, public service delivery is the mechanism through which services are delivered to the public by local, municipal, or federal governments, including education (Naidoo, 2017).

The Solomon Islands Development and Education Context

The Solomon Islands is an archipelago of about 900 islands, of which less than a third is inhabited (Coxon & Maebuta, 2020). The country has a total land area of 28,369 square kilometres and includes approximately 1.35 million square kilometres of ocean. Approximately 87% of the land is customary owned, through which land rights are vested upon descent groups (Maebuta, 2011). In 1978, it gained independence from the Great Britain and became a parliamentary democracy. At independence, the national government devolved major administrative functions to the country's nine provinces. In 2019, the population of the Solomon Islands was 721,455 (Fidali & Larder, 2022) and is predominantly Melanesian (around 95%), with portions of Polynesians, Micronesians, Chinese and Europeans (Bateman, Cassity, & Fangalasuu, 2015). Culturally, the Solomon Islands is diverse, and more than 80 languages are spoken across the country (Sanga, 2015).

Formal education in the Solomon Islands has been developing and expanding since the 1970s (Coxon & Maebuta, 2020) to meet the demands of the growing population; a growth rate that McMurray (2019) recently described as alarming. Bugotu's seminal 1973 Policy Review, "Education for What?" led to the establishment of a decentralised education system (Bugotu, Maeke, Paia, Ramoni, & Arnold, 1973), reminiscent of the image of an octopus (Gaeonale, 2002; Welsh & McGinn, 1999), which aimed to allow all Solomon Islanders to develop as individuals and possess the knowledge, skills, and attitudes needed to learn and live in peace and harmony with others and the environment (Carrington et al., 2017). A few have expressed that decentralisation is appropriate for the Solomon Islands due to the country's geographical isolation, cultural diversity and issues related to transportation and communication (Sikua, 2002).

The education system has four levels of formal education: early childhood education (ECE), primary education, secondary and tertiary education (Bateman et al., 2015). In 2018, approximately 216,270 children were participating in the education system (Ministry of Education and Human Resources Development 2018), attending 502 ECE centres, 516 primary schools, 243 community high schools (CHS), 16 provincial secondary schools (PSS), 10 national secondary schools (NSS) and 47 rural training centres (RTC). In total, there are about 1,334 schools in the country and 8,927 teachers in the education system, of which 51% are female. Currently, across the nine national provinces, there are 28 Education Authorities with decentralised roles. There are nine Provincial Government EAs; one Honiara City Council EA; ten Faith-based (Christian) EAs; and eight Private EAs. The key roles of the EAs include teacher management and recruitment, support for school administration, and the coordination of activities for schools, such as organising professional development workshops for teachers in a district (Ministry of Education and Human Resources Development, 2011).

Nanau (1995) explains decentralisation as an umbrella term, used to describe organisations that spread their tasks, functions, physical structures, personnel and legislative power to subordinate bodies or offices operating in other localities. While, from a geographical perspective, decentralisation would appear to be an appropriate governance strategy for the country, the delivery of education in the Solomon Islands is not a completely devolved function and, thus, raises confusion for the education sector. In effect, two forms of decentralisation are visible in Solomon Islands' education: delegation and deconcentration. Delegation is regarded as the transfer of responsibilities for decision-making and administration of public functions from central government to a subsidiary, often private organisations that operate across states, provincial governments, educational authorities or districts (Walberg, Paik, Komukai, & Freeman, 2000). The responsibilities that are often transferred in delegation are planning, management, and resource-raising and allocation (Rondinelli, Nellis, & Cheema, 1983).

Deconcentration is described as assigning some amount of administrative responsibilities to different levels within the same central government Ministry (Rondinelli et al., 1983). Thus, deconcentration is the intra-organisational transfer of functions to the peripheral offices (Siminou, 2007), which Smoke (2015) describes as establishing local units of central government. Delegation, on the other hand, is to the transfer functions to an external body. In Solomon Islands education, therefore, deconcentration is the geographical administrative decentralisation that the Ministry of Education and Human Resources Developments (MEHRD) applies to the provinces and islands through its Provincial Education Authorities (PEA) serving its government-owned schools and PEA officers are appointed and deployed to administer these services. For the faith-based and private schools, scattered country-wide, MEHRD *delegates* service delivery to them. Under decentralisation generally, there is ambiguous allocation of responsibility, which leads to most EAs appearing to not have the authority to make decisions and, therefore, having less opportunity to innovate to create change. For Faith-based and Private EAs, in particular, it means that these EAs have designated responsibilities, but no power to make policy decisions.

This dual model of administrative decentralisation contributes to the confusion and challenges experienced in the Solomon Islands education system. For example, it has long been highlighted by former education officers that problems exist between the perceived role of all the EAs and the expectations of schools, resulting in ineffective and inefficient delivery of education across the country (Sikua, 2002). Indicative of the system's ineffectiveness is the many student 'push outs' in the country (Sikua, 2002). Inefficiency is exacerbated by general low levels of accountability across Solomon Islands' provincial governance (Cox & Morrison, 2004). This affects service delivery overall, and for education in particular, including the EA's ability to efficiently deliver services to schools that address the needs of teachers and students. Inefficiencies in the system are also exacerbated by unaccountable and inexperienced leadership in schools (Memua, 2020). As Smoke (2015) points out, "one of the core mainstream decentralisation principles is the need for a clear assignment of service functions/revenues among government levels. Without clarity about which level is responsible for a function, neither higher levels nor citizens will know which actor to hold accountable." (p. 220).

Public Participation Theory

In using PPT as a lens to examine the decentralised education system in the Solomon Islands, the principal question here is: How might PPT contribute to enhancing the EAs' effectiveness and efficiency in delivering services to schools? This research appreciates and acknowledges some components of Naidoo's (2017) model, which supports delivery of municipal services in South Africa, as the guiding theoretical framework. The key features from the Naidoo framework relevant to the ecology of the education sector in the Solomon Islands are public participation, transparency and accountability, gender representivity, and communication. Brief explanations of these features of PPT follow.

Public Participation

Several researchers offer explanations for public participation. Naidoo (2017) defines the concept as a means or process by which potentially interested and affected parties are given an opportunity to comment on or raise issues relevant to an application. In other words, it sets out the opportunity for people to raise concerns on issues affecting their lives. Marzuki (2015) goes further and defines participation by people in the institutions and systems that govern their lives as a basic human right. Thus, important dimensions of public participation encompass human rights, realignment of political power to disadvantaged groups, and enhanced governance and development. Creighton (2005) perceives public participation as a mechanism for governments to communicate and interact with the public and stakeholders to provide information and to inform administration decisions. Quick and Bryson (2016) and Yadav and Mishra (2014) argue further that public participation is about directly or indirectly involving stakeholders in decision-making design, and in monitoring and evaluating policies, plans or programmes in which they have an interest. The primary purpose for public participation is, therefore, better decisions that are supported by the public (Creighton, 2005). In this research, the stakeholders included students, teachers, officers in the EAs, and staff in MERHD in the Solomon Islands.

In terms of decentralisation impacting public participation, Patrinos and Fasih (2009) reported that the decentralisation of management roles to schools (schools-based management) has had some positive impact, including encouraging parents to participate voluntarily in some responsibilities such as learning support and financial management. In the Solomon Islands, a participatory study was conducted by Chan, Ross, Hoverman, and Powell (2010) to develop a model to manage the water system in Honiara. The highly inclusive participatory model they developed enhanced all parties' management capacity, and built trust and facilitated relationships between different stakeholder groups. Creighton (2005) claims that the more public participation happens, the greater the likelihood of better decision-making, and thus, the greater the chance that outcomes will improve.

In this study, public participation was facilitated through forums and meetings to provide opportunities for schools and stakeholders to discuss challenges and problems in education delivery; consider how to address the needs and problems of schools; encourage participation in decision-making; and support working with schools on budgeting and future planning for service delivery.

Transparency and Accountability

Transparency and accountability are key contemporary principles, particularly in relation to good governance (Acosta, 2013; Ferry & Eckersley, 2015; Islam, 2005). Use of the word transparency stems from the 1990s and supranational organisations' and non-government organisations' advocacy against corruption (Ball, 2009). In general, transparency is described as the extent to which a (public) organisation allows external actors to monitor and assess its internal workings and performance (Grimmelikhuisen & Meijer, 2014). Ball (2009) noted that transparency in public policies provide citizens with information to make better choices about the services received, and a transparent policy is deemed effective when such action is taken. In its relationship to decentralised governance, Grant and Keohane (2005) argue decentralisation makes transparency easier as it is expected that people can demand to monitor the use and abuse of power and hold those in power to account for their development decisions.

According to Cavoukian, Taylor, and Abrams (2010), "accountability is the obligation and/ or willingness to demonstrate and take responsibility for performance in light of agreed-upon expectations" (p. 408). Accountability is regarded as answerability and enforcement and "goes beyond responsibility by obligating an organisation to be answerable for its actions" (ibid.) and inactions (Romzek & Dubnick, 1987; Schedler, 1999). Public officers are obliged to deliver appropriate services according to the needs of the people and should be answerable to those they serve. Grant and Keohane (2005) point out that accountability functions to expose and sanction abuse in two areas: unauthorised and illegitimate use of power; and decision-making that is judged by stakeholders to be unwise or unjust. Doh (2017) argued that poor accountability mechanisms are linked to poor service provision which, as pointed out earlier, could be linked, in part, to poor clarification or commitment to the responsibility assigned at each level (Smoke, 2015).

In the Solomon Islands' education sector, mechanisms to promote accountability and transparency are stipulated as the guiding principles in the Education Authority Policy and Guidelines (Ministry of Education and Human Resources Development, 2008). In this policy, EA officers are required to understand that grants are public funding. Under the policy, different officers are responsible and accountable for the management of these public funds at different levels; that is at school, provincial and national level. For those who underperform in their financial responsibilities, the Ministry might impose sanctions (Ministry of Education and Human Resources Development, 2008). For this approach to be transparent, the policy highlights that every education officer, school and community needs to know and understand the level of funding each Education Authority receives from the national government, the areas that funding is intended to cover, and how the money is spent and accounted for. Under the policy, EA funding should cover regular EA visits to all their schools; for EAs to organise professional development for teachers; provide training to improve the management of school finances, school grants and fees; offer specific project support for preparing three yearly development plans; and to improve school coordination and annual reporting.

The level of transparency and accountability in EAs and the extent that stakeholders understand the services available are examined in this article. Clarity of the costs of these services, and whether stakeholders believe that the services provided are relevant and needs-based for both students and staff are also considered.

Gender Representivity

Gender discourses have been incessant since the 1970s and highlight differences between "sex" and "gender". Oakley (1985) explains that sex refers to the biological difference between man and woman,

while gender is described as socially and culturally constructed differences in relations between men and women that are societally and culturally learned (Delphy, 1993; Pollard, Hyatt, & Panter-Brick, 1999). This important distinction means that neither all women nor all men are considered the same, and that their rights, responsibilities and opportunities do not depend on whether they are born male or female. This sentiment is borne out in the Solomon Islands Ministry of Education and Human Resources Gender Policy (2018) which ensures that gender equality between men and women involves the concept that all human beings are free to develop their personal abilities and make choices without the limitations set by stereotypes, rigid sex roles and prejudices. Addressing gender inequalities has become a significant issue globally in efforts to achieve universal primary education (UPE) and education for all (EFA) under the Millennium Development Goals (MDG) (Antonopoulos, 2009; Fennell, 2012; Huggins & Randell, 2007). To achieve greater gender equality, policies, practices and gender research have, however, focused mainly on improving schooling access for girls (Acker, 1987; Weaver-Hightower, 2003).

Since 2012, Pacific Islands Forum members have committed to advancing gender equality in the following areas: gender-responsive programmes and policies; decision-making; economic empowerment; violence against women (VAW); and health and education (Crook, Farran, & Roëll, 2016; Underhill-Sem, 2016). For education, the focus is on equal participation and equal opportunities in schools in terms of gender and disability, roles and responsibilities, and creating fairness amongst people. In Vanuatu for example, Strachan (2004) recommended that gender policy should target reducing disparities in girls dropping out, encouraging women to take administrative roles in the Ministry, encouraging women to undertake subjects like mathematics and science, and recruiting more women into secondary teaching. In 2012, Akao and Strachan conducted a gender analysis study in the Solomon Islands and identified that gender inequality was a significant challenge in the education sector (Akao & Strachan, 2012). Inequalities in schooling participation and employment were highlighted, along with female underrepresentation in positions of responsibility and greater numbers of girls than boys dropping out of school. Evidence suggests the lower participation of girls in the Solomon Islands schooling system could be due to limited school facilities (Ministry of Education and Human Resources Development, 2018) such as dormitories and water, sanitation, and hygiene amenities.

Using a gender representivity lens, this article explores areas where service delivery could pay more attention to including boys and girls in decision-making processes, to ensure the services delivered are appropriate, and meet the needs of both male and female students and teachers.

Communication

Within the framework of public participation, communication plays a significant role (Naidoo, 2017). Based on Naidoo's model, effective communication includes accurately informing the public about an issue in simple, clear language with information that is up-to-date, providing reports in a timely manner, and being open to receiving feedback.

Effective communication is a dialogue, a two-way exchange involving the transmission of information and provision of feedback. Windahl (2009) points out that the transmission aspect also involves sharing and accessing information about emotions, attitudes, views, perceptions, or commands between participants. Thus, communication is a means of showing respect to the rights of people, and especially recipients of services. Good communication is key to building a democratic society. It is also imperative to include and acknowledge the co-creation of material to reach a mutual understanding and decision.

Good communication is fundamental to improving efficiency and effective delivery of services to improve the quality of education. Naidoo (2017) argues that effective communication also depends on effective leadership. Being able to effectively communicate the goal of the organisation is crucial if leaders want to improve the performance of the organisation. It is not until clear lines of

communication are established that any improvement of services might be achieved. Accomplishing successful communication processes with different stakeholders is not always easy (Janse & Konijnendijk, 2007) and depends on stakeholders being able to connect others' messages to their own frame of reference, and then deliberate on the meaning of the message.

This article examines the quality and levels of communication between stakeholders to assist in determining where service delivery improvements might be made.

Research Question and Methodology

In view of the context of education development in the Solomon Islands and the problems experienced therein, the research question posed is:

How might public participation theory (PPT) contribute to the effective and efficient delivery of services by EAs to teachers and students?

The research design and approach focused on case study. Participants were sought from different EAs and their associated schools with the purpose of identifying factors affecting effective and efficient delivery of education services to schools. The premise of the research is that in determining which factors need support and strengthening, investment in these areas may improve the delivery of education services in the Solomon Islands. This research focused on understanding the perceptions of the participants such as education officers and school leaders in relation to education decentralisation, and its impacts on the delivery of education services.

Within the theoretical framework of PPT, the study utilised a qualitative data collection from participant one-on-one, semi-structured interviews and focus groups (Creswell, Klassen, Plano Clark, & Smith, 2011). Purposive sampling was used to select the participants for this study, a technique that is based on researcher's judgement of which sample best represents the features needed for the research (Cohen, Manion, & Morrison, 2007). Here, the education officers are the 'knowledgeable people' of their contexts and organisations (Cohen et al., 2007). The sample population comprised officers from six pre-selected EAs (a mixture of Provincial, Faith-based and Private EAs), and a few school leaders from schools under their auspices. An assumption of this research was that this sample would give insight into the characteristics of the wider population (Sutanapong & Louangrath, 2015).

The semi-structured one-on-one and focus group interviews were conducted through zoom. The primary reason was due to the COVID-19 pandemic, making physical access to participants not possible. The results from the one-on-one and focus group interview data, deductive coding was used to draw the key themes (Alhojailan, 2012; Azungah, 2018).

Findings and Discussion

This section summarises the key messages that emerged from the participant data analyses, in relation to the PPT themes (participation, transparency and accountability, gender representivity, and communication), education decentralisation, and the delivery of education services delegated and deconcentrated to EAs.

Participation

The study identified only one PEA actively encourages and practices participation with its schools while two other PEAs were not keen to organise forums for participation. Additionally, a faith-based EA and a Private EA – reported that they listen to the opinions of their stakeholders, the teachers and students. This unfamiliarity with the notion of, and the reluctance to engage in, participation is at odds with a key essential characteristic of decentralisation, which is active participation of the people (Mollah (2007). The study also revealed that infrequent interaction with schools, mostly by the PEAs' officers resulted in long delays in solving the problems raised by teachers.

Overall, the findings do not portray the PEAs as particularly reputable organisations that work to support their teachers in the schools. It is inevitable that better relationships will be built when EAs address teachers' problems in timely and cost-effective ways. The EAs, as teacher management organisations, therefore, need to make more commitment to interact with teachers and actively seek participation with their schools if they are to improve their service delivery.

The literature informs that involving teachers in making decisions leads to greater teacher satisfaction (Conley, 1991; Keung, 2008). It is interesting to note that the schools in this study reported that participation is normal practice within some schools, with interaction among both teachers and students at staff meetings, in classroom level discussions and at the school board meetings encouraged. As one participant in the study expressed:

We do meet in staff meetings and share ideas. Also, students have representatives in the board. Students also participate at the classroom level to discuss their needs. These are then communicated through the class teachers. BECS [school] always prioritises the needs of the students. As a leader I always accept requests from the students and school responds to the needs. For example, the school has just established new toilet blocks. Also, student leaders participate to discuss in a participatory way to share their needs. (BECS 01)

Another participant pointed out that school proximity to the EA plays a role in teachers' access to EA officials. This effect, however, did not extend to the students, which suggests that there is no clear participatory process within the EAs for the involvement of youth (Naidoo, 2017), especially those in schools:

The school is ... close to the EA, therefore participation happens. Teachers participate well in workshops organised by the EA. EA build good relationship with teachers and so that allows for better participation. There is low participation from students. Students are not given the opportunity to share disagreements. So about 100 students, wrote a letter to the EA complaining about the teachers. Students need to be allowed the opportunity to share disagreements, needs and what they like. (Marara 01)

In the Solomon Islands, the needs and welfare of the learners are paramount and having access to education and being heard is the students' right. As the literature points out, participation provides the means for hearing the concerns and needs of students (Jeruto & Kiprop, 2011; Mager & Nowak, 2012) and practicing participation shows consciousness of the rights of children to education. Any problems concerning learners are problems for all stakeholders, including the EA. This research has heard the voices of the students. in class meetings and in school boards. Evidence from this shows student participation is encouraged right to the remote schools in the country.

A further difference was recorded in relation to EA participation with teachers in urban and rural schools and with students in each setting. Although rural teachers showed willingness to collaborate with the EA in addressing problems concerning their welfare, it seems that the EAs have not been visiting the rural schools. This contrasts with the experiences of urban teachers who appreciated that their EA seriously considered their problems and needs and engaged with them in solving the issues. These findings show a discrepancy and inconsistency in participatory practice; the EAs have not been extending equal opportunities for stakeholders to participate in all rural and urban contexts. This finding contradicts to Bishop and Davis (2002) who allude that governments see their role as providing a forum for discussions and ensuring the participants are representative of the broader community's interests.

Study participants, in general, identified significant benefits of participation and recognised that it is time for the EAs to consider seriously greater use of public participation as a means to improve education delivery in their schools. Greater participation contributes to building better relationships

between the EA, teachers, and students and this study highlights that improved participation provides an opportunity to solve problems and address needs at all levels. As FYCS 01 explained:

In terms of my EA, participation is what is always encouraged for us to do. So, participation has resulted in the development of the 4-year Whole School Development Plan (WSDP), Annual Work Programme of the School, and review of the Annual Work Programme.

While system planning is a centralised function, at a school level participation in the preparation of development plans and school planning allows the teachers' needs and valuable contextual knowledge to be considered in school planning, which is likely to lead to the development of more effective school plans. Engaging the teachers, students and communities will create greater opportunities for sharing of knowledge, resources and expertise. Greater engagement with the EA will allow them to better understand the critical ideas teachers and members of the communities can offer.

This section highlights that the EAs consulted in this study have not been strategically practicing participation and that participatory access to the EAs by their stakeholders is uneven and inequitable. This calls for the process of participation to be explicitly delineated so that EA officers can actively engage and promote the process. Greater and more frequent interaction between EAs, school leaders, teachers and students in all contexts will be of benefit to everyone's understanding and contribute to more effective and efficient delivery of education services to teachers and learners in schools.

Transparency and Accountability

Literature shows that greater transparency and accountability increases the effectiveness and efficiency of service delivery (Lufunyo, 2013). Given that transparency and accountability, in this context, is about the openness and responsibility of EAs in the delivery of education services to schools in their regions, the EAs' non-disclosure of financial information to school leaders and teachers revealed in this study is notable. As Marara 01 stated: "*[The] EA at times could not disclose the cost of services delivered to teachers. ... finances should be forwarded to the schools to meet the cost of the services.*" Indeed, this topic proved to be very sensitive among the EA participants and was avoided many times. One EA official referred to financial issues as "poisonous", meaning secret, and so information could not be disclosed across the entire EA group. This implies that poor transparency on the part of deconcentrated EAs makes it hard for schools to monitor their performance and hold them to account. In which case, decentralisation does not influence the improvement of accountability and transparency in education.

The lack of answerability seen in this study suggests that the accountability relationship is generally weak between EAs and their stakeholders (Read & Atinc, 2017). However, while the weakness is obvious in the EAs' accountability relationship towards students in the rural schools, it is stronger towards teachers in the urban schools. This study posits that greater effectiveness and efficiency can be reached when transparency and accountability is made explicit for all stakeholders, including teachers and students in both urban and rural schools. Leadership is ambiguously related to accountability in this study.

Gender Representivity

Despite attention to gender and education being enshrined in the latest Education Policy (Ministry of Education and Human Resources Development 2008), this study reveals an imbalance in service delivery relating to teachers. In particular, services were shown not to meet the needs of urban female teachers. This experience is common across all the EA that were part of this study. To better reflect MEHRD's Education Policy, it is imperative that the Solomon Islands education service, through its EAs, identify the needs of females as well as males, in both urban and rural settings. In the context of the Solomon Islands, a 'one size fits all' approach may not be appropriate, hence the EAs as organisations

need to take a more flexible approach when considering the types of education services that will be appropriate in rural and urban schools and for male and female teachers in those settings.

In particular, the quantitative survey showed that decision-making opportunities are particularly scarce for rural female teachers. This aligns with similar challenges faced by communities in Narok county, Kenya, where the patriarchal society had yet to achieve gender equality on issues of decision-making (Kwena, 2013). In the Solomon Islands, this calls for EAs to put stronger emphasis on encouraging females to seize decision-making opportunities.

Overall, the survey results revealed some evidence of appropriately gendered services being delivered to students in rural as well as urban schools and that a majority of the services do meet the needs of both males and females. An example of full attention to equal opportunities is seen in a school that provides separate classes for boys and girls to cater for their different learning needs. This policy is actively supported by their EA, as interviewee FYCS 01 explained,

In my opinion, the EA is gender conscious. In the enrolment, EA support almost (50%) males and (50%) girls. The policy is approved by the EA and annually, we take about 50% boys and 50% girls.

These findings are positive signs of a growing awareness of gender representivity and underline Ribot's (2002) claim that decentralisation can contribute to improving services overall, but more specifically in catering for both male and female members of a society.

Communication

It was evident in literature that effective communication positively contributes to the efficient delivery of services (Naidoo, 2017; Windahl, 2009). Findings from the quantitative survey revealed that a large number of both urban and rural teachers felt their EA communicated in simple language, which enhanced understanding and clarified the services delivered by the EA. At the EA level, direct communication was perceived to be the best form for sharing information. Clear communication is commonly executed across delegated as well as deconcentrated EAs in the Solomon Islands.

Giving responsibilities to education officers to work with the schools requires good communication skills and needs regular virtual and physical interaction. However, a shortage of staff in the EAs makes maintaining physical contact with remote schools and very remote provinces difficult, as an EA leader, Temo 01, explained: *"I can only communicate with them [the education officers] to ensure that they work with schools"*. This implies that deconcentrated EA leaders are dependent on their officers' communication skills and acumen to pass on instructions to the schools that are very remote.

Communication technology is valuable but can also be challenging in the Solomon Islands, and frequent outages create further difficulties, particularly for schools in remote locations, or schools located in steep valleys surrounded by mountains (e.g., AC1). This was also highlighted by Temo 01:

Tikopia is very difficult to communicate with especially at this point in time as there are problems in the network and for high frequency radio, the battery was not working anymore. (Temo01)

Conversely, a participant from a faith-based school described the closeness between the school and EA which illustrates that when schools develop a close relationship with the EA, communication can be an effective, two-way process, despite the EA not being physically present in the school, as BECS 01 revealed,

I think we are happy that we are close. Communication between schools and EA is not a problem. We have emails and frequently communicate with EA. Our EA communicated well with schools about the services from the Ministry. EA did not visit the school regularly. However, communication is effective.

The above evidence reveals that the Faith-based EAs tend to create closer communication relationship with schools than Provincial EAs. However, while communication can be reliable between a school and its controlling EA, this does not guarantee that issues are responded to in a timely manner, as Marara 01 pointed out: *“Communication is good. Communication is not a problem but responses from the EA to addressing issues are not on time.”* Such delays lead to the EA being less efficient, and not providing timely feedback on important issues ultimately affects the running of their schools. Generally, it was felt that communication to both rural and urban teachers is effective when simple language is used, but it is considerably more difficult when the locations of EA and schools are remote, and/or when the EA responses are not very timely.

Overall, the findings from the study suggest that improved levels of communication between EAs and their schools would increase the effectiveness and efficiency of service delivery. Paying particular attention to raising the communication skills of EA officers and leaders, making sure the language used in all communications is relevant, clear, and simple to understand, and ensuring the interactions are active two-way processes with timely and relevant responses and action would be places to start.

Conclusion

Despite the limitations in this research, the evidence collected using a PPT lens can set some directions for improvement within the EAs in the Solomon Islands. Still it has the potential to contribute to better effectiveness and efficiency in the delivery of education services in the Solomon Islands. However, there has been a greater difference between the evidence in the study in the potential use of PPT to deliver education services in rural and urban schools. First, although the EA officials tend not to promote participation, it is a common occurrence in schools. The research has shown participation to be beneficial. It enhances relationship-building, collective decision-making and is a means for effective problem solving and developing appropriate school plans. Explicitly encouraging public participation within EAs would be productive. This should be further promoted amongst the rural schools in the Solomon Islands. Second, transparency and accountability generally are weak areas for the EAs; increased openness and financial discussions would improve trust and strengthen the decentralised system. This calls for all EA to better understand the principles of transparency and accountability.

The EA need to be answerable to all schools and more attention has to be focused on rural schools. Transparency and accountability mechanisms need to be placed to allow for EA to be open and reachable by all schools. Third, applying gender representivity promotes better decision-making opportunities for both males and females and ensures that the services provided are more likely to be appropriate to the needs of male and female teachers and students, in both rural and urban schools. Finally, ensuring that all communications between stakeholders are clear and simple is paramount to promoting decentralised delivery of educational services. Communications made in the most common lingua franca which is pidgin will be effective for all. The use of this medium of communication is compatible with the notion of wantok system. Using the concept of wantok system should allow EA to implement the PPT with diligence and care. A key reason is that the wantok system provides the space for friendliness and strengthening of the network amongst schools and EA. So services delivered through the PPT and leveraged by the wantok system will be effective and efficient. While an imbalance in the way EAs and schools communicate has been recognised, it is also clear that the use of simple language has a positive impact on the delivery of services. Mandating that all communication with schools should use clear, simple language and be relevant and informative would be a positive step in improving the EAs' service delivery to schools in the Solomon Islands. Therefore, MEHRD should consider adopting this framework to inform the policy for supporting EAs improve their performance in the delivery of education services in the Solomon Islands.

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Analyzing the effectiveness of the TUAM approach to mathematics in Vanuatu using constructivist grounded theory

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Abstract

The 'I Do–We Do–You Do' approach of teaching is the common teaching practiced in mathematics in the Republic of Vanuatu. Nevertheless, research has discovered that other learning approaches can also help stimulate students' mathematical thinking. The 'Try-Understand-Apply-Mastered' (TUAM) discovery learning process introduced by Takahashi (2006) is one of the approaches now employed in many mathematics education systems. This study was administered based on the Constructivist Grounded Theory approach to explore students' opinions on the TUAM approach in the Vanuatu context. The intention was to examine the TUAM strategy based on learners' ownership of their learning. The impression is that since learners are the purpose of teaching, thus their perspective of learning processes is necessary to be observed. The study was administered through semi-structured interviews with students among one grade four and one grade five class of the same school. Both grades were treated as experimental classes in which five mathematical lessons on multiplication were consecutively administered. The findings through the study discovered three major interlinked themes revealing a possibility that the TUAM discovery learning approach can have a positive impact on students' mathematical thinking in the Vanuatu context of mathematics education.

Introduction

It is important to understand that mathematics is not limited to one particular teaching approach. Nevertheless, according to Miller and Baner (2012) many teachers today are still teaching mathematics the way they were taught. Although children behave differently in terms of their maturity, intellectual ability, preferred learning style, performances in mathematics, as well as their attitude toward mathematics yet they are taught in the same way (Bergeson, Fitton, Bylsma, Neitzel, & Stine, 2000). Being a teacher is beyond understanding how to teach. Being a teacher also requires the individual to understand how learners learn. Particularly, in mathematics, there is meaning in the mathematical task when students conceptualized mathematical ideas based on their learning styles (Grevholm, 2009). Grevholm (2009) further states that the teaching of mathematics should support the development of students' knowledge structure. Therefore, teachers are strongly encouraged to take risks in exploring teaching techniques that might suit their learners' learning styles rather than using the techniques they were influenced by in their elementary periods. As Hayes (2009) stated, effective learning occurs when teachers adapt their teaching methods to suit and satisfy their learners' abilities and make learning fun. And also a good teacher will allow pupils to take control of their learning so that learners become more independent in their academic endeavors (Hayes, 2009). Similarly, Kurvits and Kurvits (2009) agreed that since students are very different in many ways, teachers in mathematics should not be just lecturing and let the students be active in the brain only, but rather they should consequently involve active dialogue between themselves and the students. They should be aware that one of the weakest characteristics of

teaching mathematics is frequently closing down opportunities for exploring learners' understanding (Hayes, 2009).

Literature Review

The 'I Do-We Do-You Do' approach

Central to the Vanuatu national curriculum, the 'I Do-We Do-You Do' is the prescribed approach for mathematics education in the country. According to the Ministry of Education and Training - Republic of Vanuatu (2018), the approach is structured on three dimensions. The 'I Do', the 'We Do', and the 'You Do'. The first step which is underlined as 'I Do' simply refers to the teacher exemplifying at the beginning of the lesson. The second step which is labeled as 'We Do' refers to the teacher together with students through more examples. And the final step which is categorized as the 'You Do' refers to the students' opportunity to solve mathematical problems on their own. In short, it begins with the teacher first, then teacher and student, and finally the student on his own.

The approach reflects Vanuatu's traditional ideology of education. It is extracted from the country's cultural and traditional way of learning whereby children learn best by observing and copying from peers, parents, and adults or elderly people (Sanga, Niroa, Matai, & Crowel, 2004). It is strongly believed here that children learn best when they observe and copy what others do. The approach is considered to some extent as a scaffolding process of learning. In the first step, the "I Do" stage, teachers in Vanuatu used examples and demonstrations to guide students' minds in learning new mathematical content. Based on Vygotsky's theory of constructivism, they considered providing examples during a lesson as a way of manipulating students to tackle problems on their own.

The Try-Understand-Apply-Mastered (TUAM) Approach

Mathematics is taught differently in different countries. Unlike Vanuatu, Japan on the other hand is teaching mathematics through the TUAM discovery learning process in reverse of the 'I Do-We Do-You Do' model of teaching. This problem-solving strategy is described by Takahashi (2006) with the initials T-try, U-understand, A-apply, and M-mastered. According to Takahashi (2006), the first step in this approach of teaching which he called 'Try' with the initial 'T' is when the problem is presented and the first attempt is given to students to explore and discover the solutions to the problem. The next step in this approach is 'Understand' with the initial 'U'. This is where students are guided through discussion to compare and understand different solutions to a problem. After comparing the solutions, is the 'Apply' stage with the initial 'A'. Here students are given other similar problems with the opportunity to apply the method they have confirmed during discussion. When students are applying the skills they acquire from the first and second steps, here they are also mastering the skills and this is where the initial 'M' for 'Master' comes in as the final step in the process. In short, it begins by presenting a problem that can be solved through varying methods, and later have a whole classroom discussion on the settlement options (Johansson, 2012). The approach is based on the principle of no telling or no providing of answers, but rather, as a teacher, one is allowed only to point to and discuss the distinguishing features of possible solutions to the problem (Baker, Dias, & Prabhu, 2012).

According to Mayer (2004), this concept of the discovery learning process is well recognized as the constructivist approach in which learners are active sense makers who seek to build coherent and organized knowledge. Bakker (2018) did not want to restrict the term discovery to the act of finding something unknown to humankind but rather wanted to include all forms of obtaining knowledge for oneself by the use of one's mind. This approach provides the best opportunity for students to construct

new knowledge using their minds. It is a process of training one’s mind to think critically and improve their speed, accuracy, and confidence in mathematical concepts. Trninic (2018) further described this approach as the notion of student-as-explorer. He explains that through this strategy, knowledge is discovered by the student. The explorer is an active organizer of experiences, constructing stable understandings by repeatedly constructing them anew. He continues by saying that it is worthwhile for students to begin constructing knowledge of arithmetic principles through the discovery process. Ojose (2008) further pointed out that children can develop mathematical reasoning skills when they are investigating ideas through the discovery learning process.

This approach of teaching allows students to work freely in a learning environment (Mayer, 2004). They are not restricted to constructing learning processes. They can develop mathematical reasoning skills through investigation (Ojose, 2008). The opportunities they have enhance their mathematical understanding when they extract relevant information from a problem statement (Ojose, 2008). Unlike the ‘I Do-We Do-You Do’ approach, the TUAM strategy tolerates the scaffolding theory by Vygotsky in its rightful manner. It exposed scaffolding as temporary instructional support that develops cognitive reasoning (Byun, Lee, & Cerreto, 2013). In contrast, Table 1 presents the summary of characteristics each teaching strategy has.

Table 1: The Characteristics of the ‘I Do-We Do-You Do’ vs. the TUAM approach

Characteristics	I Do, We Do, You Do	TUAM
Problem solutions	Students are guided through examples to solve problems	Students are provided with the opportunity to explore possible solutions
Instructions	Students are instructed on what to do and how to do it	Students are instructed on what to do and not how to do it
Knowledge acquisition	Students acquire new knowledge based on examples	Students use their minds to construct new knowledge
Motivational factors	Students are motivated to learn through examples	Students are encouraged to learn through self-discovery
Student engagement	Teacher structures and facilitates ongoing formal and informal discussions through examples.	Teacher structures and facilitates ongoing formal and informal discussions based on learners’ ideas.
Learning support	Students participate in collaborative activities in which they understand that what they do must reflect what the teacher does	Students participate in collaborative activities in which they understand that learning is a process and mistakes are a natural part of learning.
Learning Climate	The learning environment is where the teacher’s work is valued, appreciated, and used as a learning tool	The learning environment is where student work is valued, appreciated, and used as a learning tool

Objective

Central to the expansion of the TUAM approach in mathematics education internationally, the purpose of this study was to examine the effectiveness of the TUAM approach on elementary students in the Republic of Vanuatu. Distinctively the study focuses on students’ perceptions to this particular teaching approach.

Research questions

The research questions administered for this study were:

- Can the TUAM discovery learning process impact students' mathematical thinking in elementary schools in Vanuatu?
- What specific influence does the TUAM discovery learning process have on students?

Methodology

The Constructivist Grounded Theory approach

This study was treated as qualitative research. All data were collected through student interviews from one randomly selected school. The interviews were recorded, decoded, transcribed, and analyzed to look for common themes related to students' perceptions of learning mathematics. The Constructivist Grounded Theory approach by Charmaz (2014) was employed to generate, construct and analyze the data. This approach was necessary for this study as it allows the researcher to construct analytic codes and categories from data using the constant comparison method which involves making comparisons during each stage of analysis leading to the development of theories or conclusions. Initially, all recorded interviews were firstly decoded into script providing the opportunity to analyze each narrative more deeply. The codes extracted from the script were observed as key ideas in the narratives that expose the participants' intentions about the situation. These codes were compared and categorized under specific categories that express related opinions from different participants. The categories of codes identified were then compared and classified under major themes. According to the Constructivist Grounded Theory, these themes were recognized as the phenomenon behind the issue. Initially, in a Constructivist Grounded Theory study, the steps taken are primarily to identify the central phenomenon, the causal conditions, the intervening conditions, and the strategies and consequences that impacted a situation (Strauss & Corbin, 1998). Therefore, this study needed to use the Constructivist Grounded Theory which provides a framework for the qualitative inquiries to scrutinize this investigation to discover the effectiveness of the TUAM approach of teaching based on learners' opinions.

Data collection

The data for this report was collected in June 2021 through semi-structured interviews among 35 grade four and five male and female students from one randomly selected school in an urban area in Port Vila, Vanuatu. The school, the grades, and the participants were randomly selected and treated as an experimental group aiming to identify and explore students' learning attitudes associated with the teaching approach administered for experimentation. Fourteen semi-structured interview questions were administered. The questions were sorted into three categories. The first four questions were intended to collect basic information from students as interviewees. The next five questions were aimed at examining students' preferable mathematical activities and their intentions associated with the activities. This is to observe students' attitudes towards the activities treated during interventions. The last five questions were expected to evaluate students' preferable means of learning. Particularly, to observe students' opinions about the approach of teaching used for interventions. All interviews were video recorded, decoded, transcribed, and analyzed using the Constructivist Grounded Theory with the consent of the individuals to look for common themes associated with learning and teaching approaches. The relevant themes have been identified and are presented precisely as extracted from the transcription of the interviews.

Results

The findings of the study were based on the fourteen semi-structured questions administered through interventions. The analysis through the Constructivist Grounded Theory classified the interlink categories extracted from the initial codes under three interlink themes. These themes were (1) Beliefs, (2) Attitudes, and (3) Intentions. Generally, the findings discovered students' beliefs about mathematics, their attitude toward mathematics, as well as the intentions of their behavior toward mathematics. These themes are further discussed below.

Beliefs

This theme which was specified in the interview analysis looks at the scope of the beliefs students have about mathematics. Initially, this theme was obtained from the category of codes labeled 'practical thinking' which described students' practical perspectives of mathematics in daily lives. Participants of this study reported that mathematics is a subject full of activities that incorporates mathematical experiences, interest, and real-life situations. Participants also highlighted mathematics as a field that connects mathematical ideas to the real world. Few students among the participants highlighted that they realized that mathematics produces life skills and that it is a subject that relates mathematics to the real world, and also a subject that motivates them for higher education. When participants were asked, why do they like mathematics? One of them who stated mathematics as his favorite subject explained that mathematics allows him to count items at home. See this student's response in Table 2 Student A. Such a response is an indication that students' interactions with real-world experiences are influenced by mathematics.

Another participant stated that mathematics helped her to calculate money when helping out in her mum's little shop. See this student's response in Table 2 Student B1. When the participant was asked about her mum's reactions after serving the customers on her behalf, she responded that her mum was always happy for her and that she encouraged her to continue doing her best in her school work. See this student's response in Table 2 Student B2. Few other participants pointed out that mathematics prepares them to obtain better jobs in their careers in the future. They reported that mathematics can help them become engineers, pilots, doctors, and so forth. When students were asked how they know mathematics can help them become such personnel, one of the participants responded that because in mathematics they deal with lots of calculations. See this student's response in Table 2 Student C.

Table 2: Practical thinking – students' responses

Student	Response
A	<i>Mathematics helped me to count when doing things at home. When my mother gives me money and requests me to buy bread, I can count how many bread to buy enough for how many people. And also I can calculate how much money I will have left after buying the bread.</i>
B1	<i>I like mathematics because it helped me to work at my mum's little shop at home. Sometimes when mum is busy and neighbors wanted to buy things at the shop, mum will always ask me to serve the customers.</i>
B2	<i>Mum is always happy for me and she will always thank me and encourage me to work hard in school. Sometimes she will give me chocolate when I worked in her shop for longer hours.</i>
C	<i>I wanted to become a pilot in the future and that's the reason I must obtain good grades in mathematics because in mathematics there are lots of calculations to solve. And when you know how to solve the problems you will be able to calculate bigger numbers.</i>

The theme emerging from these ideas indicated that students might be thinking or viewing mathematics as an important avenue for developing life skills. Participants believe that mathematics can provide profitable skills which are helpful to solve problems in their daily lives thus it motivates them to enjoy learning mathematics.

Attitudes

This theme looks at the scope of the pleasure students have in learning mathematics. According to the Constructivist Grounded Theory analysis, the initial codes categorized to obtain this theme were classified under two categories. 'Interest in collaborative learning, and 'interest in individual learning'. These two categories were obtained from the initial codes that describe students' attitudes towards mathematics.

Interest in collaborative learning

This interlink category described the attitude students have towards learning mathematics collaboratively. Generally, the findings highlighted that collaborative learning is an aspect of the discovery learning process whereby mathematical knowledge is acquired when exchanging mathematical ideas. Even though participants did not have many opportunities to work collaboratively, nevertheless it was highlighted that the few moments of collaborative activities influence their attitude towards mathematics. Most responses from participants highlighted that interactive learning provides the opportunity to learn from each other. When one is having difficulty, there is an opportunity to get help from another learner. When students were asked; do they like interacting with their friends during mathematics lessons to solve problems or do they want to solve mathematical problems on their own? One particular participant responded that he likes interacting with friends because they have the opportunity to help each other during difficult moments. See this student's response in Table 3 Student A. Another participant responded that he likes interacting with friends because in class it is difficult for him to ask the teacher for help but he is more comfortable asking his friends for help at any time. See this student's response in Table 3 Student B1. When the participant was asked why he was behaving this way, he conveyed that he never had an opportunity to get assistance from the teacher in times of difficulties in the past. See this student's response in Table 3 Student B2.

Table 3: Interest in collaborative learning – students' responses

Student	Response
A	<i>I want to interact with my friends because we can help each other when one is confused. I can help them and they can help me too.</i>
B1	<i>I find it hard to ask the teacher when I don't understand something, but I feel comfortable and free to ask my friends for help at any time.</i>
B2	<i>Because I never had an opportunity in the past to ask the teacher when I did not understand something.</i>
C	<i>I like to work with my friends because I can help them and they can help me and at the same time I can concentrate on my work.</i>
D	<i>I like to interact with friends during mathematics because when we discover the steps to solve a problem, I can remember the steps and use them to solve similar problems in the future.</i>

Participants also reported that collaborative learning encourages them to accept responsibility for their learning while respecting the right of others. One particular student highlighted this when asked; do they like interacting with their friends during mathematics lessons to solve problems or do they want to solve mathematical problems on their own? He explained that through interactive learning, he was able to

concentrate on his work and at the same time he could help his friends when they encountered difficulties. See this student’s response in Table 3 Student C.

This category described students’ interest in mathematics when each other’s ideas are appreciated by each other and instill in them a sense of ownership in learning. The emotion that learning is important and that it belongs to learners. Participants further explained that collaborative learning motivates them to achieve, and nurtures their desire to learn. The excitement in learning depicted that learners appreciate the fact that learning belongs to them. There was also a category of responses associated with this theme labeled ‘communicating and connecting mathematical ideas through interactions’. This category was extorted to describe students’ realization of the benefits they obtained through interactions and discussions. For instance, some participants highlighted that when they interact with each other to discover a solution to a problem, they can remember the solution later on in their learning. When they were asked; do they like interacting with their friends during mathematics lessons to solve problems or do they want to solve mathematical problems on their own? Student D in Table 3 pointed out that when he solves a problem on his own, he will be able to remember the steps in the solution in the future. All these results depicted a possibility that collaborative discovery has a positive impact on students’ mathematical thinking.

Interest in individual learning

The findings of this study also discovered that students developed a positive attitude toward mathematics when they have the opportunity to explore mathematical ideas on their own. According to the results, participants conveyed that mathematics is a subject that boosted their potential to achieve a set goal. When participants were assigned tasks during interventions, most of them were motivated to explore solutions to mathematical problems on their own. They were excited to interact with the activity regardless of the mistakes they encountered. Such determination motivates them to achieve what they wanted to achieve. When they were asked, what are some activities or what kind of activities they enjoy doing or like to do during mathematics lessons? Most students indicated that they enjoyed multiplications. Multiplication was the main theme for this intervention. And when they were asked why they liked this particular activity, some of them explained that they enjoyed it because they were challenged with the opportunity to solve multiplication problems themselves. One particular student stated that, the activities were fun and that they helped him to recall his previous knowledge about multiplication tables and make connections when learning new ideas. See this student’s response in Table 4 Student A. Another participant responded that he was able to remember how to solve multiplication problems based on the trials and errors that he encountered. See this student’s response in Table 4 Student B.

Table 4: Interest in individual learning – students’ responses

Student	Response
A	<i>I like multiplication activities because it was fun. I enjoyed it too because I was able to put into practice the multiplication tables that I usually learn at home with my mum.</i>
B	<i>I like multiplication because when you gave me a problem to solve and I do it by myself, I can tell that I know how to do it. And when I did it correctly, next time I will do it correctly because I already know how to do it.</i>

When mathematical ideas were made simple through self-discovery, it motivated learners to discover more about the rationales behind the new concepts. These results provided a possibility that when

students are allowed to explore their mathematical potential they also will be able to acquire an understanding of new mathematical concepts.

Intentions

This theme looks at the scope of the motives associated with students' attitudes towards mathematical education. Two interlink categories were discovered associated with this theme. The 'intrinsic motivational factors', and the 'extrinsic motivational factors'. These two interlinked categories were obtained from the initial codes that described the intentions of boosting students' interest in mathematics.

Intrinsic motivational factors

Results indicated some intrinsic motivational factors that boosted students' relationship with mathematics. Participants reported that the opportunity that allows them to explore mathematical solutions on their own encouraged them to do their best. Allowing them to solve mathematical problems individually may be challenging, nevertheless by doing so their mistakes become their best teacher to teach them the best solutions to any mathematical problem. Learners use this opportunity to take risks in their learning regardless of the mistake they encountered. When participants were asked; whether they like interacting with their friends during mathematics lessons to solve problems or do they want to solve mathematical problems on their own? One participant responded that he will remember solutions to mathematical problems if he attempts and discovers the solutions by himself. See this student's response in Table 5 Student A. Another participant responded to this question by explaining that when he is working on his own, he cannot be interrupted unnecessarily by others and thus he can concentrate more and be able to complete his task on time. See this student's response in Table 5 Student B.

Table 5: Intrinsic motivational factors – students' responses

Student	Response
A	<i>I want to solve mathematical problems on my own because when I did it correctly I will never forget how to solve the kind of problem.</i>
B	<i>When I do my work on my own my friends cannot interrupt me so I can complete my work quickly. Because sometimes when I work with friends, they always talk too much and disturb me and sometimes I cannot complete my work.</i>
C1	<i>I always like to do my work on my own and I like it because when I make mistake I can learn from that mistake when I get the answer to the problem right at the end.</i>
C2	<i>If an example for a mathematical problem is not shown I will try my best to solve the problem. I know I will make mistakes, but if I make any mistake and the teacher helps me I will still remember how to solve the problem.</i>

Participants also convey that when they work individually, they have time to assess their performances. This is when students observed and corrected their mistakes in the process of finding a correct solution. Assessing one's performances here was considered an influence that motivates students to build their interest in mathematics. When learners were assigned individual tasks the self-assessment aspect motivates them to tackle the problem knowing that if they encountered errors and are corrected they will learn from them to perform better. When students were asked; do they like to interact with friends during mathematics lessons to solve problems or do they like to solve problems on their own? Some students responded that they like to solve problems on their own. For instance, Student C1 in Table 5 explained that he liked to solve problems on his own because he can learn from his mistake. When a follow-up question was asked if there is no example provided for an activity, will you still be able to work by yourself?

The student stated that he will still try to solve the problem. But if his answer is incorrect and the teacher corrected it later through discussion, he will still understand how to solve that problem. See this student's response in Table 5 Student C2. Students who voice these kinds of opinions were better able to take risks in the learning of mathematics. The responses indicated that there is a possibility of students having the potential to learn mathematics but if the appropriate opportunity is offered they will be able to improve their potential.

Extrinsic motivational factor

Extrinsic motivational factors here were regarded as influences of outside forces that encouraged a learner to learn. Without them, it will be difficult for effective learning to occur. For instance, when participants were asked; whether they like the teacher explaining mathematical solutions to them, or do they enjoy discovering solutions by themselves or with their classmates? In response, some participants reported that they preferred the teacher explaining solutions to them rather than themselves discovering the solutions. These participants indicated that they depended on the teacher's explanations to complete an assigned task. See, for example, the response from Student A in Table 6. This student prefers the teacher's explanations because it allows him to do what the teacher wanted as expected. Another participant responded that he will not be able to complete his work if the teacher erases his explanations on the blackboard. See this student's response in Table 6 Student B. These responses indicated that students depended on the teacher's explanation for learning. Another participant also highlighted that he liked when the teacher explained mathematical ideas to him because only if the teacher explains something he will be able to do it correctly as demonstrated. See this student's response in Table 6 Student C.

Table 6: Extrinsic motivational factors – students' responses

Student	Response
A	<i>I prefer the teacher to explain mathematical solutions to me because it makes it easier for me to do what the teacher expected.</i>
B	<i>When the teacher erases his explanations on the blackboard I cannot complete my work because I did not understand what to do and if I decided to do it on my own I will not do it correctly.</i>
C	<i>I like the teacher to explain mathematical ideas to me. When the teacher explained things to me, I understand them well and I can do them well too.</i>

Students who voice these kinds of opinions were convinced that learning occurs only when there is an image for them to reflect upon. The responses reflected that learners depended on the teacher to acquire a piece of knowledge. Without the teacher's explanations, they will not be able to acquire the required knowledge. Learning here is regarded to be more influenced by the teacher's performances rather than students discovering new knowledge themselves. These results indicated a possibility that even though the interventions through this study were not based on the 'I Do-We Do-You Do' approach, nevertheless because of its durable influence on students learning, participants expected to learn through observation which was contradicting the intention of this experimenting study.

Discussions

According to the Constructivist Grounded Theory inquiry, this study discovered three major themes constituted by the codes extracted from the script as discussed above to be the phenomenon central to the TUAM strategy as well as the 'I Do-We Do-You Do' strategy. The study revealed that although there is a greater influence of the 'I Do-We Do-You Do' strategy on students' learning of mathematics, the

characteristics of learning and teaching identified through the study revealed a possibility of the positive impact of the TUAM approach if adopted and adapted to the context.

Firstly, the study revealed that the TUAM strategy can equip students with the skills necessary for daily lives. Cai and Howson (2013) promoted this awareness by stating that mathematical education in the 21st century has the responsibility of nurturing students' creativity and critical thinking skills not only for lifelong learning but also for their general benefit and pleasure. Thus, teachers should promote discovery learning approaches that increase students' ability to learn new content that is necessary for life skills (Roughead & Scandura, 1968). Considering this, in theme one, participants of this study pointed out that mathematics is a subject that helps them to cope with daily activities as well as prepares them for their future careers. Such conviction as highlighted in Table 2 participants' responses indicated that when students are allowed to explore mathematical ideas themselves, they will effectively discover the connections the mathematical world has with the physical world. Such responses indicated that students are aware that mathematics is a field that drives daily life activities. They are also aware that anyone can avoid mathematics in schools, but no one will escape mathematical ideas in daily lives.

Secondly, the study revealed the possibility that the TUAM strategy encourages students to develop positive attitudes towards mathematics education. The findings reveal that when students are challenged to work collaboratively or individually, the chances of them exposing and widening their mathematical potentials are utilized. For instance, some researchers such as Sands, Kozleski, French (2000), Jaleniauskiene, and Juceviciene (2018) pointed out that when students are allowed to learn collaboratively, they will be able to learn from each other's point of view. The assistance they receive from each other during their difficult moments of learning contributed to their acquiring of mathematical ideas. Ojose (2008) further pointed out that children can develop mathematical reasoning skills when they are investigating ideas through the discovery learning process. Participants are also aware and convinced that collaborative learning under the teacher's guidance can help them to broaden and deepen their understanding of mathematical ideas when they interact and share mathematical ideas.

The extracted codes categorized to attain the interlinked category disclosed that it is through the collaborative task at the beginning of a mathematics lesson that students are allowed the opportunity to attempt solutions to mathematical problems. When students are provided the opportunity to discuss and challenge each other's ideas, there is a greater possibility for them to deepen their understanding of the mathematical concept presented through the problem. The interlink category in 6.2.2 additionally revealed through the extracted codes from the script as presented in Table 5 that when students are allowed to explore possible solutions to a mathematical problem themselves, there is a greater possibility that they will develop an interest in learning mathematics exclusive of motivational factors. Because of their desire and curiosity of exploring mathematical ideas and solutions themselves, it is not necessary to provide external factors that will motivate them to learn. This study also highlighted that students will be attracted to monitor and evaluate their learning if they are allowed to attempt solutions to mathematical problems themselves. Accepting the role of teachers as a guide, these results indicated that such a discovery learning process provides the opportunity for students to effectively acquire mathematical knowledge and skills through collaboration and self-discovery.

Finally, there is also a possibility that the TUAM strategy can encourage positive intentions in students' learning of mathematics. As highlighted by Ojose (2008), such an approach allows children to develop mathematical reasoning skills when they are investigating ideas through the discovery learning procedures. And because students are not restricted to learning, Mayer (2004) pointed out that such a discovery strategy also allows children to learn freely in a learning environment whereby they become

active sense makers who seek to build coherent and organized knowledge themselves. The opportunities they have here enhance their mathematical understanding when they extract relevant information from a problem statement (Ojose, 2008). Taking into account students' motivation through self-discovery, the script of this inquiry showed that the TUAM approach tolerates the possibility that students will be able to recall and remember mathematical concepts for longer periods. As a result of their curiosity and discovery, they were able to remember ideas based on their own experiences. The inquiry also draws attention to the fact that the TUAM approach can provide the opportunity for students to develop an interest in learning mathematics exclusive of motivational factors. Students will not depend on the teacher all the time. And most importantly, through the TUAM approach, students will be able to connect mathematical ideas to the real world and thus develop skills that will benefit them in their daily lives. Nevertheless, it is also acknowledgeable that there is a positive impact of the 'I Do-We Do-You Do' approach on students' mathematical discoveries. Considering the influence that the approach has on students in regards to learning through imitating. That it is through examples and demonstration that students felt they belong to a learning environment.

Conclusion

Mathematics education in this 21st century has more meanings when learning is treated as a research-based technique. The shift from teacher-centered learning to a learner-centered way of learning whereby learners take control of what they want to learn. Since learners are the purpose of learning, thus they should take some input into the learning. They should be provided opportunities to instigate ideas and questions for the discovery. Their chances of releasing their potential should be the core of learning. Teachers should accept the fact that learning belongs to learners and that their performances should not be a lecturing type but rather a mentor and a guide to assist the learning processes.

Initially, the findings of this study revealed that students are aware that learning belongs to them and that mathematical concepts can be acquired by anyone. The beliefs students have about mathematics are an indication that they value mathematics knowing that they have the potential to acquire its concepts. The attitudes they have towards mathematics as discovered through the study also revealed a possibility that appropriate opportunities provided for learning mathematics will enhance students' mathematical potential. There is a possibility that when students are given opportunities to explore mathematical ideas themselves, they will be able to discover and adopt mathematical ideas or solutions that suit their learning style, rather than struggling to master mathematical solutions that do not suit their learning ability. Therefore, according to the results of this study, although the 'I Do-We Do-You Do' is impacting students learning based on its durable influences, there is also a possibility of greater achievement in mathematics with the TUAM approach in this 21st-century context. Students' intentions highlighted through the study indicated that a research-based approach of teaching can broaden and deepen students thinking process in mathematics by allowing them to use their minds to explore mathematical ideas. Thus, this study recommended teachers to take the risk in allowing their students to take control of their learning regardless of the ownership of the 'I Do-We Do-You Do' approach instilled into their philosophy of teaching.

Nevertheless, while developing the methodological materials for this study, two possible risk factors were ascertained. Firstly, the results obtained were somehow disturbed by the students' attendance during interventions. Students' attendance was not consistent throughout the interventions. Some students faithfully attended the lessons but were not able to attend the interview while some students who attended the interview were not attending the classes regularly. Secondly, the number of lessons administered for interventions was very limited to influence students' opinions in the midst of their

accustomed 'I Do–We Do–You Do' approach. The TUAM approach has experimented through five lessons only whereas the 'I Do–We Do–You Do' approach has been the practice of learning and teaching in the country for decades. Thus, students were accustomed to the technique of learning and teaching delivered by the 'I Do–We Do–You Do' approach. These limitations were anticipated to have some impact on these results.

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Challenges to the implementation of the fee free basic education in Solomon Islands

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Abstract

This study evaluated the implementation of the 'Fee Free Basic Education' (FFBE) policy in Solomon Islands schools in order to gauge its strengths and weaknesses in achieving quality education. The FFBE policy was implemented to achieve basic education which aims at preparing children through lifelong learning and gaining worthwhile information, knowledge, understanding, skills and attitudes necessary to develop their full potential to be useful citizens in their communities and nation and be able to live a worthwhile and happy life (MEHRD, 2009a; MEHRD, 2011a). The study involved 12 participants who were interviewed. There were also observations done at the schools visited at Malaita and Central Provinces and Honiara, the capital. Using Kumar's (2014) method of analyzing data, factors that were identified included the classroom environment that are often not conducive to learning. Schools often lack proper facilities with the required equipment and materials. Continuous teacher absenteeism from work and lack of commitment to teaching, and minimal parental support for the school and student learning were other factors. Therefore, suggestions highlighted were that there must be a nationwide awareness of the policy's requirements, improve mechanisms for teachers' capacity building, change the school grant management system and schools should be properly monitored. The FFBE is a noble idea but addressing loopholes can ensure sustainability.

Introduction

The basic education policy was formulated to address Article 26 of the Declaration of Human Rights, which expressed that everyone has the right to education, so education shall be free, at least in the elementary and fundamental stages (United Nations, 2015). This Declaration was also highlighted by the Convention on the Rights of the Child (1989), Article 28 which emphasised the right to free education as being important for all children regardless of their background, status, gender, or health (UNESCO, 2007). To achieve these rights, countries formulated policies that enabled equal access to basic education for all children, and one of the mechanisms that many nations implemented to achieve this education goal is Fee Free Basic Education (FFBE). Goldin (1999) believed that while education is about lifelong learning, "much of it does not take place in formal settings" (p. 8). Much of the learning experiences occur within the family, "whose role in the educational process remains of primary importance" (Talbot, 1971, p. 142). Formal education is an important process in the lives of individuals as they grow to become active individuals in various institutions with the aim of consciously living harmoniously with each other in diverse societies (Bloom & Cohen, 2002).

The FFBE policy in Solomon Islands was implemented since 2009 with the aim of preparing children for lifelong learning and gaining worthwhile information, knowledge, understanding, skills and attitudes necessary to develop their full potential to be useful citizens in their communities and nation and be able to live a worthwhile and happy life (MEHRD, 2009a; MEHRD, 2011a). Basic education takes place during the first nine years of formal education from years 1 to 9. These first years of schooling should provide a “level of education that constitutes the foundation stage offered to all children” (MEHRD, 2009b, p. 10). Hence, this study aims to evaluate the effectiveness of implementing the FFBE policy in schools and how it impacted and influenced the quality of basic education in Solomon Islands.

Literature Review

While many countries in the world have made significant progress towards the provision of education for all children, a report entitled ‘Education for All 2015 Global Monitoring Report (GMR): Education for All 2000-2015: Achievements and Challenges’, (UNESCO, 2015a) has indicated that only one-third of countries have achieved all the measurable education for all (EFA) goals set in 2000. Equal access to quality education is the right of all children, as enshrined in the UN 1948 Declaration of Human Rights (UN, 2015) and fundamentally addresses parents’ desire for their children to have access to quality education. This principle has been accepted by nearly every nation (Wilson, 2015). However, studies in the area of education have found several factors that have denied children from achieving their right to quality education. Some of the contributing factors are high school fees, limited classroom space, insufficient qualified teachers, lack of quality educational resources, discrimination, poverty, and inadequate government funding (Borkum, 2012; MEHRD, 2009a). Therefore, to try and minimise these barriers to education, the ‘Basic Education Policy’ was initiated to address Article 26 of the Declaration of Human Rights, which expressed that everyone has the right to education, so education shall be free, at least in the elementary and fundamental stages (UN, 2015).

Many studies were conducted on the impact of ‘Free Education’ in African schools, and their findings were almost the same (Chimombo, 2005b; Moshia, 1998; Sifuna, 2007). Chimombo’s (2005b) study on ‘Quantity versus Quality’ of primary education in Malawi found that ‘Free Primary Education’ policy did achieve its objective of allowing access to primary schools. As a result, there was an increased enrolment both in urban and rural schools. As a result, more poor families sent their children to schools. A similar finding from a study done by Oumer’s (n.d.) on ‘The challenges of free primary education in Ethiopia’ through a case study, observation, analysis, and document review, found that indeed the cost of education was prohibitive for many children from poor societies. In 2002, the Ethiopia Government abolished the fees for primary schools, and this initiative was viewed as a positive development by parents, school leaders, and teachers, and it encouraged a dramatic increase in children enrolling in schools. Following this, disadvantaged families managed to send their children to school. However, even though the government was funding the primary schools, there were some not-so-hidden costs such as school uniforms, stationery, and lunch meals that families still needed to pay, which some parents were not able to afford. This finding was similar to the findings of a case study by Daven (2008) in Tanzania that primary education was actually not free. There were hidden costs such as school uniforms, school materials, school contributions, and salaries for security officers or school cooks, which parents could not afford and thus were unable to send their children to school. These extra costs slowly affected enrolment and increased drop-out rates in primary

schools. Therefore, these studies suggested that there should be more coordination, capacity development, and more awareness about initiatives such as these before implementation.

Oumer's (n.d.) suggested that there should be more public awareness events planned to highlight the 'free education' initiative so that everyone could fully understand the policy's intentions and requirements. This suggestion by Oumer's (n.d.) is similar to the recommendation by Nanau (2018) in his writing on educating the people and the governance of primary education in Fiji, Kiribati, Samoa and Solomon Islands between 2000 – 2013. Nanau (2018) found that in Solomon Islands, a lot of parents and the communities "wrongly interpreted the 'fee-free education' policy as education with the government meeting all the costs associated with education" (p. 123). This was because when the policy was initiated, there was a limited explanation about the policy and the purposes of the school grants. Parents and the public needed to understand that the school grants only catered for certain activities and thus, parents were still obliged to contribute financially when schools required their assistance. The perception of fee-free education has been recognised as a credible social goal and has been implemented in the education systems of many countries in the world (UNESCO, 2011). Therefore, there is an urgent need for better and wider awareness about the policy and its requirements so that parents and the communities fully understand and perform their roles and responsibilities towards their children's education.

Similar experiences on increased enrolment in schools as a result of the free education policy were also expressed in Papua New Guinea (PNG) and the Solomon Islands. A study done in PNG by Abady (2015) on the 'impact of the free education policy on the school executive's decision making in the management of class size' found that this policy was highly welcomed by parents because most of the families were on a low wage scale, therefore, could not afford to pay expensive school fees to send their children to school. The study found that the free education policy had enabled many children to enrol and attend schools than was not possible before. Abady's finding is similar to the situation in Solomon Islands. Since the implementation of the FFBE policy in 2009, more children than before in rural and urban areas have enrolled in schools. The 'fee-free education' policy provides an avenue for increased access to education however, there were challenges it created to the education systems as found by various researchers such as Chimombo (2005a) of Malawi, and Abady (2015), and Ravinder (2011) from Papua New Guinea. Some of the challenges identified were as follows: lack of adequate materials, overcrowding classrooms, school leadership dishonesty and less parental support for their children's education.

The quality of FFBE policy implementation is worth investigating. Quality in education is a complex and debated concept. The espoused visions and definitions have mostly been influenced by current political and theoretical trends at both national and international levels (Barrett, Chawla-Duggan, Lowe, Nickel, & Ukpo, 2006). Nations invested in improving the quality of education for its citizens as an essential approach to creating economic growth (Tikly & Barrett, 2011, 2013; Walker, 2012). As Tikly and Barrett (2011) stated, the rationale of quality education was to equip people with "skills for participation in the global knowledge economy" (p. 4). Recently, nations and organisations have developed and implemented policies that emphasise quality education that can equip people with relevant values, skills and important knowledge for life after school (UNESCO, 2015).

Research Methodology

This study had undertaken qualitative research methods, which include semi-structured interviews. The interviews were in *Pijin*, the lingua franca of Solomon Islands, and two interviews with parents were in the kwara'ae dialect of Malaita province. The researcher speaks the kwara'ae language, and this was appropriate as it enabled the participants to fully express and share their views. Observing classroom lessons and the school environment were also part of this study. A total of 12 research participants took part in this study, and they are as follows: 3 School Leaders that are identified as SL1, SL2, SL3; 5 Class teachers as CT1, CT2, CT3, CT4, CT5, and 4 parents as P1, P2, P3, P4. All participants (except the parents) were selected based on the 'purposive sampling' because they are the implementers and users of the educational policy (FFBE) and, therefore, have experiences to share (Cohen et al., 2018; Rahi, 2017; Taherdoost, 2016). Purposive sampling is a "process where researcher use own judgment to select a group of people who knows about the problem" (Rahi, 2017, p. 3). For example, the MEHRD officers were selected based on their role in the development and management and have "in-depth knowledge" (Cohen et al., 2018, p. 219) about the FFBE policy.

The parents were selected using 'convenience sampling' based on their availability at the site (Cohen et al., 2018; Rahi, 2017; Taherdoost, 2016) and were personally approached by the researcher. A limitation could be that the lead researcher, who did the field work, is an insider. She recognised how she could be biased in some of my reasoning, thinking, and also interpreting the responses of the participants as she was once part of the system. In addition, being an insider researcher, researching in an environment that you are familiar with can have a "danger of over-rapport with the participants" (Bonner & Tolhurst, 2002, p. 5), but she was always making sure that she maintained a professional distance as a visitor collecting data from my communities. The research question the study aims to investigate is to what extent does the delivery of the Fee Free Basic Education policy been effective in Solomon Islands?

Interviews

All the interviews from this study were conducted at the venues most convenient for the participants, such as their offices, classrooms, and their homes. The face-to-face interviews with all the participants each lasted approximately one hour. The process of checking and confirming data with the participants contributes to the trustworthiness and credibility of the data (Cohen, Manion, & Morrison, 2011). Permission was taken for interviews to be recorded and the interviews were tape-recorded because it is considered appropriate for this study, as the raw data remains for later references (Menter, Elliot, Hulme, Lewin, & Lowden, 2011). For this study, after each day's interview, the researcher did the transcription each night, then on the next day or the day after, the transcribed scripts were shown or read and discussed with the participants for checking and confirming the interview data. Data were analyzed using Kumar's four steps: i) identifying the mains by going through transcriptions, ii) assigning codes to the main themes, iii) classifying the responses under those themes, and iv) integrating the themes and resources in the text of this study.

Findings

Basic Education Prepares Students for Life

This study aimed at getting views from school leaders, teachers and parents on whether the basic education level of Solomon Islands enabled students to acquire relevant knowledge, skills, competencies

and values for life by the end of year 9. The participants were asked about this statement. All participants reported that 'Basic Education' level was yet to achieve the statement of preparing children through 'lifelong learning' and to be useful citizens to the community and the nation. This is illustrated by SL2 below:

There are not many practical sessions done at the basic education level in the community high schools that can prepare our children to be independent or critical thinkers because of not enough resources, materials or equipment, therefore most of the teaching in class is just orally. How can you expect students to achieve that goal if they spent all the school days sitting in class listening to the teacher and copy notes from the chalkboard or books. (SL 2)

Another factor was that a lot of teachers needed innovative ideas to be able to be creative and make learning and teaching fun. Most of the participants shared that a lot of students will not achieve the basic education goal by the end of Year 9 because most teachers only teach orally and write up notes on the chalkboard then the students copy notes into their books. There should be more hands-on activities to instill basic skills in the students, as SL1 shared:

I think our students are yet to achieve this objective by the end of year 9. The system did not prepare them to be independent or survive in the long run:

- a) The curriculum is exam-oriented; therefore, students are taught to pass exams.*
- b) Education before in secondary level, students are involved in more practical activities like gardening, basic mechanic, sewing, basic woodworking, but now there is less of practical activities. The schools are without proper facilities, equipment and resources to do practical activities that can help students to gain basic knowledge and skills to help them survive or future living. (SL1)*

Class teachers also shared the same concern as school leaders, as explained in comments by CT3:

I don't think students will fully achieve the objective because the schools did not prepare them to be competent or critical thinkers in their lives. Most teachers teach the students to pass exams. It is the 'exam-oriented' system. It is more teacher-centred. Even though there are practical subjects that emphasise more hands-on activities but the reality in the classroom is theory teaching. (CT3)

The five parents had also shared their views on whether the basic education prepared students with the relevant knowledge, skills, competencies and values for life at the end of year 9. They responded that only very few students will achieve the basic education goal. This was because they saw their schools involved more in theory teaching than learning through practice. The following are comments made by P1 and P2:

I don't think all students completing year 9 can achieve the objectives of basic education and quality education because most of the teaching and learning in class are based more on listening and copying. There should be more practical activities where students can be involved in discussing and going outside of the classroom searching for answers. For example, during my school days we made plant nursery and school farms for agriculture lessons, made chairs in woodworking. Now there is less practical or none in some schools. (P1)

Looking at some of our students here that completed year 9 from the nearby secondary schools, they just waste time at home smoking and drinking kwaso (homebrewed alcohol) and causing too much noise and nonsense in the village. A lot of them roam around in the city doing nothing. I

think schools are not preparing them with relevant skills and knowledge to help them when they leave school (P2)

However, one of the class teachers from a rural setting stated that few committed students can achieve the basic education goal because they lived in rural settings and their experiences at home and their environment will equip them with survival knowledge and skills after completing year 9. CT4 said:

For us in the rural area, I think by the end of year 9, students can achieve the basic education objective because in their lives they experience doing housework, garden work and some basic survival skills learnt from their parents such as fishing, hunting, climbing coconuts and making sago palm houses. For example, children going fishing then sell the fish for money. (CT4)

Therefore, according to the responses from this study participants, formal basic education is yet to fully equip students with relevant knowledge, skills, competencies and values for life by the end of year 9. Thus, MEHRD needed to relook at the issues and challenges stated by the participants that hindered the achievement of basic education objectives, such as the continuous monitoring of teachers' performances and keeping emphasis on teachers to be creative in their teaching.

Do Schools provide Quality Education?

Participants of this study were asked for their views on whether their schools were providing quality education to their children. All of them, except one, stated that the schools were yet to provide quality education to the students. The reasons were overcrowding in classrooms, less committed teachers, inadequate teaching and learning environment, limited resources, and less parental support to the school. CT5 shared his views below based on his experiences:

I don't think we are achieving quality education because the support from parents is still poor or slow. The classrooms are not conducive. For example, my classroom when it is raining the floor will be flooded because the rain comes in through the windows. When it is hot weather, it will be really hot and uncomfortable in class. (CT5)

Parents were also asked whether they thought their schools were providing quality education to their children. Four parents stated that their schools do struggle to provide quality education. P3 expressed her concerns as follows:

I don't think our schools are providing quality education or preparing our children to be useful after leaving school because of the teacher's continuous absence from class and students stay home missing out of many important lessons at school. (P3)

Therefore, the parents suggested that to be able to achieve the basic education objectives, learning at school must be more practical to enable students to be creative and innovative for their survival and lifelong living.

Nationwide Awareness

School leaders, class teachers and parents of this study stated that SIG through MEHRD needed to do a nationwide awareness on the policy requirements so that the public was made aware that the school grants were not for infrastructure but only intended for students' learning. This way, parents may understand that they were still required to support the school through the provision of free labour or volunteering and paying extra fees for school developments. Presently, school leaders keep reminding parents of the policy requirements and their support in paying extra fees, but most of them do not trust the school leaders and are reluctant to help. The following suggestions for improving quality education in schools were made by SL3 and P1:

There is a need for better awareness about the policy and its requirements must be done to the communities by MEHRD Officers so that the communities believe and are satisfied on the use of school grants. When an awareness programme comes from someone different from the school leader, parents and the communities will be aware and can improve their support to the development of their schools. (SL3)

The intention of the government for fee-free education is really a good intention but the problem is there should be a nationwide awareness to let parents and the public know about the policy's objectives and the school grant allocations. The public need to know that the government only funds students learning and the school infrastructure is the responsibility of the parents, therefore parents will still support to build the school infrastructure. (P1)

School Grant Management

The school leaders and class teachers suggest that school grants should be managed by MEHRD or for each school to have a school bursar to manage the funds so that the school leaders can concentrate on the school administration, teaching and monitoring. Also, this can lessen the misuse of funds, as suggested by SL3 in the following comments:

I suggest school grant should be managed by MEHRD then when schools apply to purchase resources and equipment, MEHRD pay for them and send to schools. School Leaders do the ordering of materials but MEHRD does the purchasing. If not then, each community high schools should have a bursar to manage the funds so that School Leaders can deal with school academic sides only. (SL3)

Class teachers of this study also suggested that school grants should be allocated to each subject's needs. At the moment, most of the funds were spent on stationery and exercise books. The teachers also mentioned that all class teachers should know how the school's funds were spent. The following comments were concerns expressed by C1:

I suggest school grants should be allocated according to each subject budget needs such as Agriculture tools, Science equipment. Every year I noticed the fund is only spent on stationery and exercise books. (C1)

School grants such as the 'student grant' are meant for students' learning, therefore subject materials are important for the teachers and students to use in their teaching and learning. For transparency purposes, teachers needed to know this and also be part of the management of the school grant.

School Monitoring

All teachers and parents of this study suggested that MEHRD and the Education Authorities needed to do continuous monitoring of the schools to see that the funds were spent according to their allocations and also to check that the teachers were delivering quality learning to their students. The following comments were shared by CT2 and P4:

I suggest Education Authorities should do continuous monitoring of School Leaders and teachers to see that they are teaching well and delivering a quality education we want. (CT2)

I want MEHRD to do a regular monitoring of School Leaders and teachers to see that they are doing their work faithfully. This is also to stop teachers from their continuous absence from teaching. (P4)

Teacher Absenteeism

Teacher absenteeism from work and lack of commitment to teaching was a great concern for all the participants of this study. The interviewed school leaders revealed that some qualified teachers still lacked role modelling and commitment to their teaching service. Absenteeism was still a huge problem in schools, as expressed in the comments made by SL3 below:

In this school, all teachers are qualified except for one who is still a Teacher in Training (TIT). Although all teachers are qualified, absenteeism is the huge problem here. These teachers are always either absent or late to work and they are always busy with their private matters. (SL3)

The four parents of this study also shared their concern that they wanted improvement on teacher absenteeism in their schools because it was robbing students' learning opportunities. In particular, developing basic skills such as sewing, reading, doing experiments to get results, and making projects useful for their livelihoods such as baking trays and coconut scrapers. P1 commented as follows:

My greatest concern is the teachers' absenteeism attitude. This is a very huge concern in our school. I noticed that when the Head teacher is away for weeks, class teachers will also be absent from work or send children home early during break times.

The participants of this study agreed that teachers must be trained and get qualified before they can teach. However, teachers' absenteeism from class teaching was a big issue they observed from their schools and they wanted the MEHRD to address this issue if they wanted to improve the quality of education.

Discussion

This study found that the Fee Free Basic Education (FFBE) has certainly increased access for pupils at primary schools in Solomon Islands and this is a positive outcome. However, there was concern about

overcrowding classrooms, misuse of school grants, teacher absenteeism and quality of learning. Similar sentiments were voiced by Paraide (2015) with regards to tuition fee free education in Papua New Guinea (PNG) in that the primary school enrollments have certainly increased between 2012 and 2013, for instance, by 22 per cent and achieved elements of equity and quality improvements. However, Paraide (2015) stated that being unprepared for the influx in enrollments caused overcrowding in classrooms. In addition, there were implications for teacher housing, resources for teaching and learning, and school infrastructure. In the schools that Epri (2016) studied at PNG, the recommended class sizes by the Department of Education were 30-35 students, but with fee free education, the enrollments have increased to 50-88. Individual attention to students become more difficult with an increased enrollment and the classroom sessions are very teacher-oriented (Epri, 2016). Moreover, Epri (2016) found that there are teachers and students who are regularly absent from school. When a subject teacher is absent, there are students who leave school. The teachers may be overloaded, among other factors that make them being absent (Epri, 2016).

This study also found that the idea of a basic free education is commendable but has to be accompanied with teacher capacity, better management of school grants, being able to encourage parental support and stronger monitoring system by MEHRD. In an Indonesian study, Rosser and Joshi (2013) found that there were illegal fees being charged by schools possibly because there is often a lack of funding to replace the fees in the fee free system. They also found that the fee free policy failed to increase the quality of education and with increased enrollments, there was also a high number of drop outs (Rosser & Joshi, 2013). Inoue and Oketch (2008), who studied the fee free policies of Malawi and Ghana, did note that each of the countries had different levels of what should be free. At Malawi, the fee free policy covered the tuition fee, children's uniforms and the textbooks fees. Thus, was far more pro-poor and equitable. On the other hand, Ghana only abolished part of the school fees but also invested in teacher education, as an increase in enrollments would require (Inoue & Oketch, 2008). As in Vanuatu, where their tuition free education from Early Childhood Care and Education (ECCE) to year 7, is funded by Australia and New Zealand (Roberts, 2017), it poses sustainability issues when foreign funding elapses. In Vanuatu, it covers parts of the tuition fee and not uniforms, boarding fees and various sundry expenses (Roberts, 2017). What the policy entails often needs to be made clear to parents and the community. In light of this Solomon Islands study, the following are suggested:

Nationwide Awareness

The study found that a lot of parents are still confused and yet to understand the requirements of the FFBE policy. School leaders and EA Officers kept reminding parents about the policy requirements but there are complaints being raised as to why schools still charge extra fees when the Government provides school grants. This shows that after the MEHRD's study (MEHRD, 2011b), wider awareness about the policy and its requirements was inadequate; therefore, teachers and parents were confused about the requirement of the policy. Nanau (2018) also found from his study in primary schools in Solomon Islands that many parents and communities are confused about the interpretation of the 'fee free education' policy; thus, many are reluctant to contribute financially when schools ask for assistance. Therefore, it is suggested that there is a need for better and wider awareness about the policy and its requirements to be done to the communities by the MEHRD management. In this way, parents may understand that they are still required to support schools through the provision of free labour or to pay extra fees towards school developments. Also, proper awareness of the policy requirements needs to be done so that the public is aware that the school grant does not cater for the funding of teacher houses and classrooms.

Building Grants

The NEAP 2016 – 2020 (MEHRD, 2016) clearly stated that communities and EAs and the Provincial Government are responsible for funding the building of junior secondary school facilities. However, the study found that even though schools are under the Education Authorities and Provincial Governments, the help they rendered through funding to the schools often is not enough. Therefore, schools rely on parents' contributions of fees to build school infrastructure, which often raise complaints and also garner less support from the parents. Parents thought that the school grants are for school developments, and schools should not ask extra fees from them. This mindset from parents was also found by the MEHRD (2011b) study because there was no proper detailed awareness of the policy requirements for the parents and the communities. The respondents suggested that SIG should prepare schools with funds to build new classrooms and staff houses before implementing the FFBE policy so that when more children enroll in schools, better facilities are already available. At the moment, the policy is creating 'quantity' instead of 'quality'. Hence, the SIG should introduce infrastructure grants first before introducing the School Grant policy. The government needs to provide grants to help schools build more classrooms and staff houses to cater to the increased enrolment and more teachers, especially in urban centres.

School Grant Management

To lessen the misuse of the school funds, the participants of this study suggested that school grants should be managed by MEHRD or each school to have a school bursar to manage the funds so that the school leaders concentrate on the school administration and teaching. In addition, the suggestion had been made for schools to also allow the use of the grants on each subject needs because findings revealed that most of the funds were spent mostly on stationery and exercise books which are not part of the grant allocation (MEHRD, 2012). The study indicated that the student grant is meant for students' learning; therefore, each subject materials are important for the teachers and students to use in their teaching and learning. The class teachers from this study reported that a few times, the list of materials requested for each class has always been left out as funds were not enough. Therefore, for transparency purposes, teachers need to know and be part of the management of the school grants.

School Monitoring

The study found that if schools need changes to improve the quality of education, then there is a need for continuous monitoring of schools by MEHRD and education authorities. Teachers and parents of this study suggested continuous monitoring of the schools to see that the funds are spent according to their allocations and check that the teachers are delivering quality learning to children. Teachers' absenteeism from teaching is becoming a common trend in most schools that Maebuta (2008) and the Office of the Auditor General [OAG] (2011) found as one disturbing factor that diminishes the achievement of quality education and disrupts students' learning processes. Parents and teachers suggested that the Inspectorate Section of the MEHRD and the Education Authorities must monitor the school leaders and teachers to see that they perform their duties well. In this regard, this study suggested that the Inspectorate Division of MEHRD needs to revisit its policy on monitoring teachers and the schools to improve the quality of education that Solomon Islands aims to achieve.

Teacher Absenteeism

Teacher absenteeism is a growing concern nationwide, contributing to lowering student achievement. This study revealed that when teachers are absent from teaching, students also do little at school. The

findings in this study concurred with the findings of Maebuta's (2008) survey on the impact of schools on students in Solomon Islands, that "teacher absenteeism was another issue that students believed impede the quality of learning" (p. 103). In Fiji, Chand's (2011) study found teacher absenteeism increased in some Fiji primary schools. When teachers are absent, their classes were supervised by another class teacher. However, in most situations, the supervising teacher usually spent most times concentrated on controlling the discipline of the classes; therefore, less "teaching and learning took place during a teacher's absence" (Chand, 2011, p. 155). In Papua and West Papua, teacher absenteeism is a chronic problem because of the remoteness in many places, and it is a great concern for the parents and the communities because it damages and limits children's access to quality education (UNICEF, 2012). When teachers are absent from teaching in the classroom regularly, the learning processes of students becomes disrupted (Brown & Arnell, 2012; Maebuta, 2008). The SIG provides school grants to improve access to schools so that all school-aged children can access education; however, the challenge is, it is no use having greater access for students when there is chronic teacher absenteeism in schools which impeded the quality education children receive. Therefore, SIG needs to seriously look into this matter.

Conclusion

Free education in Solomon Islands has increased the enrolments of students who would have otherwise not have been at school without this policy. However, the increased enrolments have also put enormous demands on existing facilities and resources. The policy did help reduce the barriers to access but ongoing awareness with the community is also critical to understanding the FFBE policy better and what it entails. With instances of grant mismanagement that surfaced, better monitoring and accountability processes could be put in place. Mismanaging funding and mismanaging the school-community relationship, where it exists, is not beneficial for the school. The underlying reasons for a high teacher absenteeism requires further investigation. The FFBE policy has an integral aim in providing universal basic education to Solomon Islands students and can serve to produce a fairer and just society. It has the potential to develop and harness the potential of many students. With more access, it is bound to improve the literacy rates of the country. However, gaps this paper identified will need to be continually addressed in order to improve both the quantity and quality of Solomon Islands students' education.

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Interrogating readiness of Fiji's secondary school science teachers for eLearning: A qualitative case study

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Abstract

The recent COVID-19 outbreak and the resulting closure of schools across the globe saw an upsurge in the use of learning management systems (LMS) by schools for eLearning. In Fiji, this presented an important challenge for the Ministry of Education, Heritage and Arts (MEHA) with the uncertainty regarding the readiness level of both the students and teachers for the use of eLearning tools to conduct lessons. Using the Technology Acceptance Model (TAM), an interrogation into better understanding the readiness of Fiji's Secondary school science teachers for eLearning has revealed five major factors. These factors after being grouped under the two components of TAM namely *Perceived usefulness* and *Perceived ease of use* provided a useful assessment of the e-learning readiness of the secondary school science teachers in Fiji. The five factors include *skill and psychological readiness, institutional readiness, teacher training, flexibility, and student-centred learning*. Close consideration of these factors provides the opportunity to enhance the teachers' perceptions regarding the usefulness and ease of use of eLearning to teach science subjects.

Introduction

The use of Information Communication Technology (ICT) for teaching and learning science has started to receive much consideration due to the popularity of online learning in response to the prolonged school closures during the recent COVID-19 pandemic. As a result, it is becoming increasingly important to gauge how prepared secondary school science teachers in Fiji are for the use of eLearning. Insight from this group of teachers was gathered to investigate their readiness levels and provide valuable suggestions on how to improve eLearning readiness for the benefit of teaching and learning science in the country.

This study is a part of a larger project that focused on predicting eLearning readiness among secondary science teachers in Fiji (Prasad, Raturi & Rao 2021). The first part of this study revealed positive correlation relations between readiness and motivation for eLearning with computer technology usage, internet usage, perception, implication of eLearning on science education, teacher training experiences and institutional eLearning status (Prasad et al, 2021). Prasad et al (2021) proposed a model for eLearning readiness indicating that teachers' readiness is dependent on their technology usage skill, their perception and their perceived implication of eLearning on science education. This study employs a qualitative approach to gather further information in this discourse through the Technology Acceptance Model (TAM) lens. Explanations from the lived experiences of the participants are used to make recommendations to address the gaps that exist. Changes in areas such as curriculum design, teacher training programs, and infrastructure development are a major part of these suggestions and recommendations.

Furthermore, some key assumptions made are:

- That the teachers who were part of the study used the same secondary school science curriculum which is directed by the Curriculum Advisory Service under the MEHA in Fiji.

- That the racial, cultural, and gender inclinations of the teachers were not a relevant determinant of their readiness for the use of eLearning
- That the teachers have undertaken some form of teaching qualification and have sufficient science pedagogy

Research Questions

The following are the research questions used as the main steering tool for the research work:

1. How useful would eLearning be for teaching secondary school science in Fiji?
2. How well can eLearning be used to teach secondary school science in Fiji?

Literature Review

eLearning readiness is mainly defined with institutions rather than individuals in the majority of the literature cited. Christensen (2015) defined eLearning as an overarching term that describes teaching and learning using digital media and electronic devices. This method of teaching and learning can be practised in various contexts from a conventional classroom that integrates learning technologies to a completely online university. Other researchers have focused on institution's readiness in their deliberation on eLearning readiness (Borotis & Poulmenakou, 2004; Watkins, Leigh, & Triner, 2004) another perspective that aligns well with the rationale of this study. Therefore, eLearning readiness is an essential precursor to the effective implementation of any new eLearning system being proposed. The same is true for the secondary school science curriculum context in Fiji. Proffitt (2008) pointed out eLearning as a universal process of teaching and learning where time factors and distance become less of a restriction, and learning is convenient, easily available, dependable, bendable, and inexpensive. These qualities are essentially what many science teachers in the country would desire in their teaching and learning process. This makes eLearning in secondary school science teaching and its pre-implementation readiness assessment stage a vital one that is worth serious consideration.

Teachers competency, attitude, and perceptions towards eLearning

Teacher experiences and skills influence their beliefs which in turn influence their pedagogical strategies (Raturi & Boulton-Lewis, 2014). Indeed, whether it is about applicability of eLearning in science classroom or implementing a particular assessment task or learning and teaching activity, the teacher's skills and experience with it is a significant part of its success. Therefore, gauging readiness for eLearning in this context means measuring teachers' competency, attitude and perception. One of the obstacle to the actual dissemination of eLearning is the cultural and subjective negative viewpoints of teachers towards eLearning (Afshari, Bakar, Luan, Samah, & Fooi, 2009). Inquiries have shown that teachers' insights and technological worldviews influence the actual usage of these technologies in teaching and learning (Paraskeva, Bouta, & Papagianna, 2008). It is thus essential to recognize the degree to which a teacher trusts that eLearning would improve their lesson delivery and be free of struggle and effort. Thus, a concrete understanding of the factors that increase user acceptance of the targeted ICT initiatives is essential not only for developing a framework but also for the eventual active practice (Park, Roman, Lee, & Chung, 2009).

Studies indicate importance of extensive consultations with teachers who are the agents of change for meaningful reforms in education systems (Samoff, Sebataane & Dembélé, 2003; Weva, 2003). In Fijian secondary schools, there is a range of reactions shown by teachers whenever there is some change implemented about their work. Anecdotally, there are instances of the need for more consultation prior

to implementing changes. Finding out these teachers' competency, attitude, and perceptions towards eLearning is a good example of such a consultation process, and researchers such as those cited above emphasize this in their findings. Similarly, teachers' success in the management of eLearning programs depends on their previous technical knowledge in information technology (Boakye & Banini, 2008). A key aspect that guides the success of eLearning is the teacher's ICT skills and expertise. Coupled with ICT competency, the educational background, preparation, and practices determine how the teachers eventually deliver lessons to their students. It is unrealistic to presume teachers to change their existing pedagogies without adequate and applicable training in assimilation of ICT and new learning technologies into their lesson delivery (Eslaminejad, Masood, & Ngah, 2009). Studies have highlighted the need for systematic training on ICT integrated pedagogies in formal teacher training programmes that prepare school teachers' continuous professional development (Awouters, Jans & Jans, 2008; Mann, 2014; Raturi, 2017; Raturi & Kedrayate, 2015). The ICT integrated pedagogies include basic understanding and skills to select appropriate tools and technologies and its seamless integration in learning and teaching to enhance the learning experience of students. Therefore, teacher training is a valuable dimension that will enable a much authentic assessment of their eLearning readiness.

The Technology Acceptance model

Davis, Bagozzi, and Warshaw (1989) state that the technology acceptance model (TAM) with its two central components, has been established to be the central element in determining a person's acceptance of any technological initiative. Wong, Osman, Goh, and Rahmat (2013) have also done a validation and testing study of the TAM in the context of Malaysian student teachers, which showed the model to be a dependable one and so, can be adopted for use with gauging the eLearning readiness of science teachers in this research. The two components (*perceived usefulness* and *perceived ease of use*) are important lenses that can be used to look at how prepared are participants for eLearning given that the teachers' perception influence their teaching strategies in the Pacific (Raturi & Boulton-Lewis, 2014). Firstly, *perceived usefulness* is how beneficial the initiative seems to the people involved while *perceived ease of use* is how easy the new initiative is to utilize according to people involved. These two key aspects together determine their ultimate attitude towards the initiative and thus decide whether they will use it or not.

In Fiji, knowing the opinions of science teachers concerning the two key aspects of TAM is a useful and necessary research dimension that has to be explored, and therefore these aspects were incorporated in the research instrument.

Methodology

The methodology used in this research was a qualitative approach. Thus, an interpretive method (phenomenological research) was looked at to get an in-depth understanding of the lived experiences of science teachers concerning their eLearning readiness.

Demography

MEHA oversees a total of nine clusters across Fiji. The clusters have a different number of secondary schools which are run by the government and non-government controlling bodies. The MEHA 2016-2017 annual report shows that there are a total of 10 government-run secondary schools and 162 schools that are run by non-government bodies. However, all 171 secondary schools are considered to be public schools as the government takes care of their various running expenditures. In addition, all the teachers which serve at these schools are employed by the government. Some of the secondary schools also provide vocational training which is also overseen by the government. Table 1 below shows the breakdown of the number of schools in the nine clusters of this study as of 2017.

Based on the number of secondary schools and the student population, MEHA allocates the various number of teachers to address the learning needs of the communities. The graph below outlines the distribution of secondary school teachers in the country as of 2017 (Figure 1).

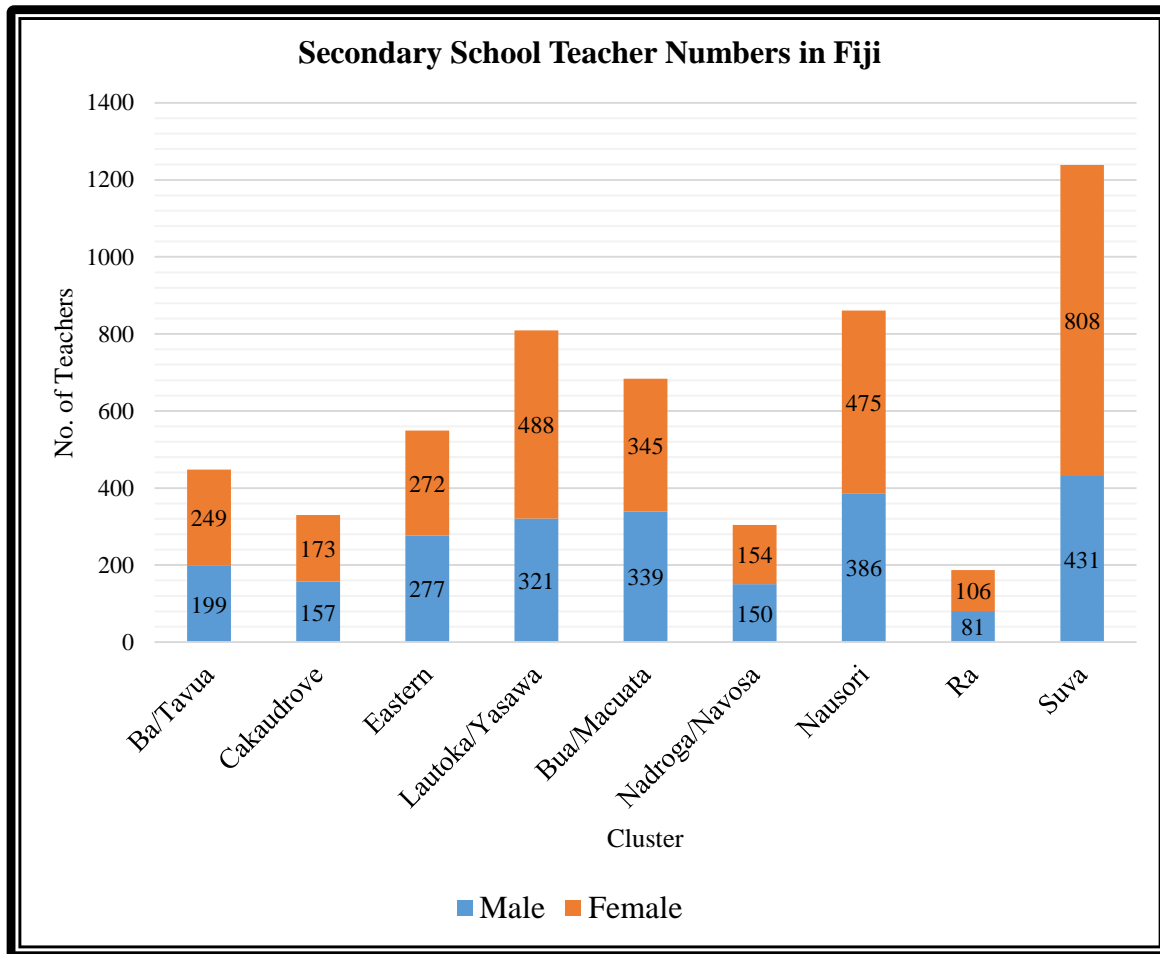


Figure 1: Cluster-wise secondary school teacher numbers in Fiji from MEHA 2016-2017 Annual Report (2017)

As evident from figure 1, a considerable portion of the secondary school teachers serve in the Suva cluster as this area has the most number of secondary schools in the country while Ra has the least. It is also interesting to note that females outnumber the males in this particular context with only one cluster (Eastern) having slightly higher male teachers than females. Therefore, to cover the entire country a participant from each of the nine clusters were interviewed. Table 1 below provides a breakdown of the nine participants.

Table 1. Research participant breakdown

Participant	Cluster	Highest Qualification	Years of Teaching experience
1	Suva	Diploma	15
2	Nausori	Undergraduate Degree	7
3	Nadroga/Navosa	Undergraduate Degree	12
4	Ba/Tavua	Diploma	12
5	Lautoka/Yasawa	Postgraduate Diploma	8
6	Ra	Undergraduate Degree	18
7	Eastern	Undergraduate Degree	16
8	Cakaudrove	Undergraduate Degree	3
9	Bua/Macuata	Undergraduate Degree	5

Research Instrument

The data collection strategy used was a semi-structured interview of purposively selected science teachers from the nine clusters which the MEHA oversees in Fiji. The intention was to have an open discussion with these teachers and get them to open up about their thoughts and perceptions associated with the use of eLearning technologies and give an indication of their readiness level to use these technologies in the immediate future. The data was coded so that trends and themes that arose were correctly identified and presented. While it was important to drive the discussion in a manner that helped the participants provide their most authentic responses, influencing their responses was avoided while discussions were done.

Specific phases were used to get through the data and analyze it to get new knowledge that was sought. Firstly, all the interview transcripts and recordings were quickly glanced at to get a general overview. Then each interview was looked at in detail and various important words, phrases, and opinions were labelled for coding or indexing. Once the data was appropriately coded, decisions were made on the coded terms that were the most relevant and important and thus were gathered into different broad categories or themes. After the important themes had been identified, connections between them were drawn up as shown in figure 1. These connections became the main results of the study that are presented in the result chapter. After looking at the results objectively under the result chapter, a subjective interpretation was made in the discussion section for triangulation of the data. In this section, while making the comparisons, the specific trends that were discovered were summarized to provide an in-depth interpretation of the lived experiences of the participants and how these experiences have impacted their eLearning readiness level.

Results and Discussion

The analysis of the interviews revealed five major themes from the analysis. The five themes were then categorized to answer the two research questions which addressed the *Perceived usefulness* and *Perceived ease of use* dimensions.

Thematic analysis

Firstly, under *perceived usefulness*, two key themes that arose were Flexibility and Student-centered Learning. Furthermore, under *perceived ease of use*, the three key themes that arose were skill and psychological readiness, institutional readiness and teacher training as shown in figure 2.

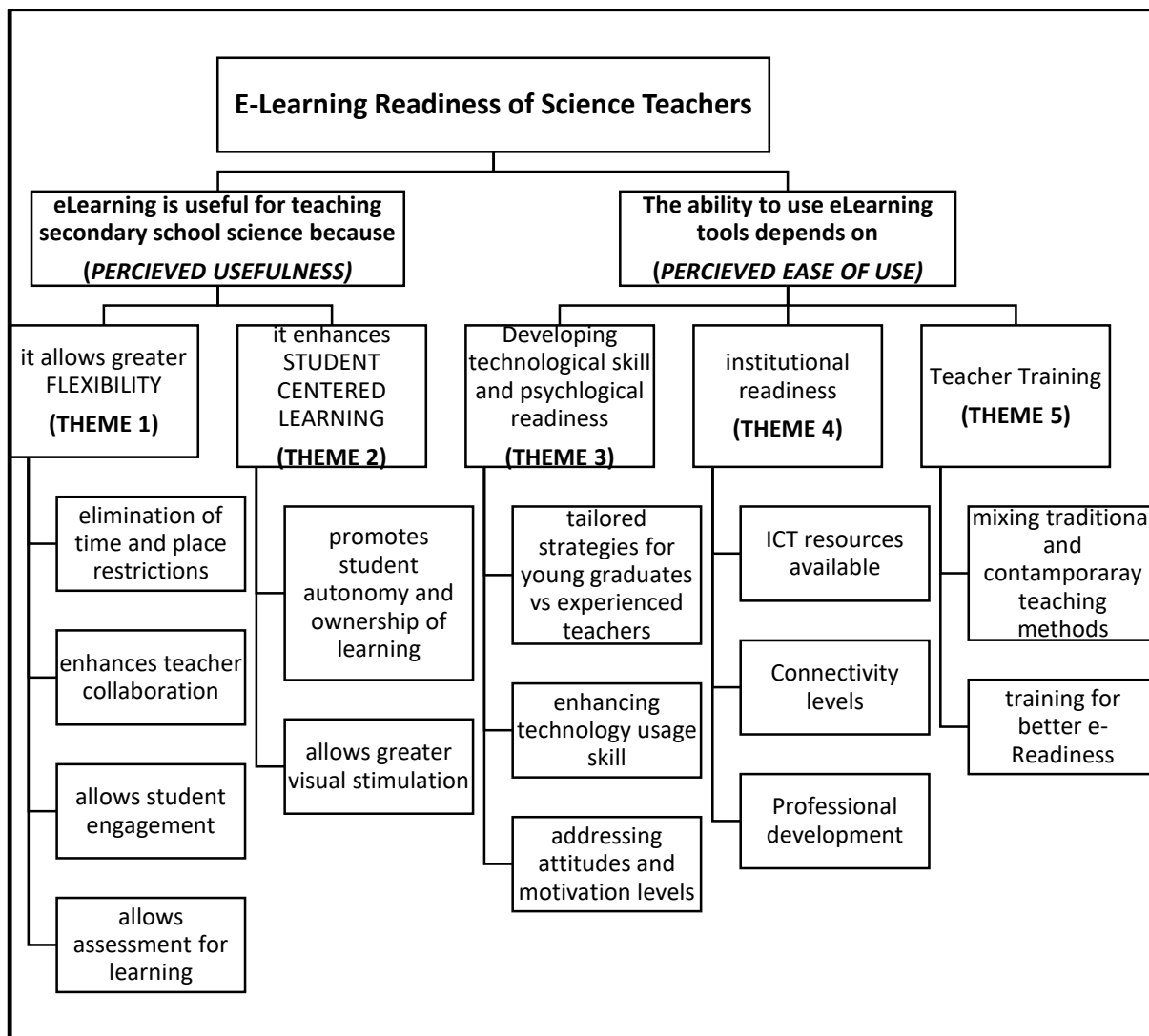


Figure 2: Thematic analysis of interviews

Theme 1: Flexibility

The teachers spoke of three key areas under this theme which included flexibility in time and place of learning, the opportunity for greater collaboration among the teachers, and better student engagement potential.

Sub Theme 1.1: Time and Place

The reduced restriction of time and place is firmly highlighted together with the potential of having more distance learning. An important comment made by participant eight was:

...biggest difference is that eLearning [in comparison to traditional teaching method] is more flexible... there is no restriction on the time and place where learning can occur. (P8)

One of the major tools that would contribute to this flexibility would be the influx of mobile phone users that are active online. It is also undeniable that students are among the largest and most frequent users of mobile phones and stay online constantly. Participant one emphasizes this fact by saying:

Our kids use mobile phones every day and if we as teachers can interact with them on such a platform, then learning can become more interesting for them. (P1)

However, participant seven also mentioned an important risk factor whereby he felt that the students cannot always be trusted to be continuing their learning outside the classroom.

Currently in the classroom we keep checking students' books and notes and there are many that don't complete it [lesson notes]. Such students cannot learn on their own. We can't expect them to learn by themselves if they can't even pay attention in the classroom. (P7)

In addition to the above, students also have greater access to their teachers beyond the physical classroom via the eLearning approach. This presents several opportunities for them to deal with difficulties that they may have had in class during their lesson. However, this can also mean that teachers could potentially get overwhelmed with student requests and questions. An interesting opinion raised by a teacher in relation to this is as follows:

...no, I don't like to add my students on Facebook because I get tired of their messages. (P5)

Responding to each student's request could become time-consuming. However, teachers can handle questions collectively through online forums or group messaging.

Thus, it is evident that the eLearning allows classroom learning to happen at any time and any place. This aspect is among the most critical contributor to the flexibility that is associated with eLearning.

Sub Theme 1.2: Teachers Collaboration

Collaboration among teachers across the country is seen as another important factor that was mentioned by respondents. The improvement in internet connectivity together with the vast growth in the usage of smartphones and other related technology has allowed sharing of learning resources among teachers increasingly achievable. Thus, participant six states that:

...more collaboration among teachers in terms of [sharing] lesson resources would increase which is very less currently. (P6)

This form of open access to highly relevant teaching resources and collaboration among science teachers give teachers the flexibility to prepare enriching lesson notes and assessments for their students. The teacher further states that teachers need to help each other by sharing resources:

I like to share my notes and papers with teachers from other schools online and as a result, I have managed to collect a bank of useful material to use with my students. (P6)

This aspect could prove to be even more beneficial for new teachers that would need assistance from those that are more experienced. The availability of social media and other forms of personal communication provides these teachers with a lot of opportunities to form useful networks to share teaching resources.

Sub Theme 1.3: Student Engagement

The participants generally believe that their students are fond of technologies such as the internet, smartphones and social media. Participant five is thus quoted as saying:

...this form of teaching and learning (eLearning) is sort of more fun for students because students nowadays are into technology. (P5)

However, teachers are also facing the added challenge of having to compete with online distractions such as social media. In response, several of the participants including participant seven suggest that instead of competing with it, they should in fact turn these distractions into useful learning tools. These technologies can be channeled in a constructive way to help students learn in a new way. Accordingly, the time these students waste going through irrelevant information online can be used to provide them with a genuine learning experience that can complement the lessons they are taught in the classroom.

It [eLearning] is sort of more attractive for students as well and students will become better engaged. (P7)

When discussions are done in classrooms there are students that are outspoken and do not mind speaking out even wrong with answers. Meanwhile, there are also those students who are reluctant to speak up even if their answers are correct. With eLearning tools such as discussion forums, participant nine argues that all students can be allowed to express themselves which the teachers can easily monitor as well.

...sometimes some students are reluctant to speak up in class but in online forums they can participate and teachers can keep track of this participation as well. (P9)

Therefore, once students are better engaged in the teaching and learning process they are able to take greater ownership of their communication technology has gotten people closer despite geographical barriers and the same is true for teachers and their students.

Additionally, because of the range of information available online for students to use in their learning, students can carry out research on their own and keep learning. This can enhance their knowledge and confidence in the science subjects leading to much greater awareness in class. Therefore, by using such useful communication tools teachers have so much more flexibility in the way they assist their students.

Sub Theme 1.4: Assessment of learning.

While monitoring of students' active participation is a useful aspect as stated above, participant two added that there is also the opportunity to carry out quick and effective assessments of their learning just as a pen and paper exam.

we should set short quizzes online for our students which they can do in their own time. (P2)

The benefit of providing quizzes and other forms of assessments online is that it can allow the students to know of their achievement immediately after they complete the tests. This can prove handy for the teachers as well since they do not have to take out time to grade tests. However, participant two says that it is arguable if such a form of assessment could be used to properly decide if a student merits movement to the next level since students can share answers.

...we don't really know whether the students will do the online test by themselves or with help.
(P2)

Other advantages of having exams done on computers is that printing costs would be significantly minimised. Secondly, the way in which grading of students' performance is done can become more streamlined as well. Thus, changing the way in which students sit for exams with the use of eLearning technology can have several implications the way students learn. Since the assessment process is less time consuming, it can be ongoing and become more formative instead of the traditional form of summative assessment.

Theme 2: Student-centred learning

Free and unrestricted access to online resources has led many teachers to suggest student-centred learning to be another significant aspect in the discussion. There are two main aspects that many of the participants tend to highlight which include student autonomy and ownership of learning and the power of visual aid.

Sub Theme 2.1: Student Autonomy and ownership of learning.

The wide range of easily accessible online content available to students is allowing teachers to design assignments that promote research skill and critical thinking development among their students. This has been contrasted to the conventional form of teaching and learning where the teachers had become the only source of knowledge and understanding for the students. Participant one highlights this point by stating:

There is more independent learning and ownership [of learning]. While in the normal [conventional] method, students were highly dependent on the teacher. (P1)

Teachers such as participant eight now expect their students to be able to initiate more meaningful discussions in class compared to the past.

...eLearning is less centred around the teachers because students can get information from the internet as well. (P8)

The science teachers are generally quite optimistic about the potential of eLearning in helping their students construct their own knowledge. Since the teacher's role begins to effectively shift from an instructor to more of a facilitator, student input in the teaching and learning process increases significantly. As a result, students get the opportunity to think much more critically in order to discriminate between the various scientific knowledge. This in turn gives them the much-needed training and experience in order to think much more inventively and perhaps solve a range of contemporary issues faced by societies.

Sub Theme 2.2: The power of Visual Aid

While the information available on the internet is vast for students, the same holds true for teachers. As a result, several participants, including participant two emphasize the availability of visual aid as one of

the biggest advantages of eLearning for them. The teachers provide important examples of concepts such as protein synthesis, molecular geometry and cell division among others:

Teachers can also use moving graphics as part of eLearning presentation. These help the teachers to make the message clearer. (P2)

Visual aids are already becoming an indispensable tool for bridging resource gaps in the science labs at several schools. Participant five explains that the various apparatus and chemicals needed in a school science lab are not always necessarily made available to them. There are many factors for this which may include financial constraints, the remote or rural setting of schools and even mismanagement of the equipment that was previously available. In any case, the important point that these teachers raise is that they are able to somewhat overcome this challenge by simply using the wide range of visual aid that is available to them online such as video lab demonstrations on YouTube.

... it can be useful by allowing teachers to demonstrate labs even if there are limited resources [in the lab] to do so and thus students are not deprived. (P5)

In addition to being a useful way to demonstrate important labs, it is also handy because these videos, as mentioned by participant three, can be viewed as many times as needed in contrast to the live demonstrations done by the teachers themselves.

People [students] can use their spare time after class for recapping using the resources provided through eLearning. (P3)

The various advantageous aspects mentioned above suggest that the science teachers Fiji are very much aware of the resources that they have at their disposal in the form of visual aid. Therefore, whether it is used to promote better comprehension of abstract concepts or as a means to address teaching resource gaps, the visual aid that is available for these teachers online is already proving to be much useful and has immense prospects for the future.

Theme 3: Technological Skill and Psychological readiness

Skill and Psychological readiness of the science teachers was an important factor which was highlighted by the respondents in the interviews carried out. This sort of readiness was articulated based on certain reflections that the respondents made on their interaction with colleagues from both the past and present.

Sub theme 3.1: Young graduates vs. Experienced science teachers

There is a general belief that young teachers and/or new graduates are seen to be more involved with the use of technology to facilitate eLearning for their students as stated below:

...noticed a mixed level of readiness. Usually I find that the fresh graduates are more ready while the senior teachers are more hesitant... (P1)

The teachers which have been serving for a long time were said to be the least ready. This is because of a traditionalist attitude and outlook towards teaching and learning that has become inherent for this group of teachers. Participant three says that:

Those teachers who have been teaching for a long time sometimes don't realize how useful technology usage in class can be because they haven't taught using those things before. (P3)

It is therefore important that computer and internet usage skills be looked at particularly for those teachers that are not too familiar with it. Age group categorization of the teachers can be a useful way of identifying teachers that need training and upskilling in terms of the usage of these tools.

Sub-theme 3.2: Technology usage skill

Participants generally agree that all science teachers need to embrace eLearning as an important teaching approach. In order for the teachers to do justice to the contemporary learning needs of their students, they need to start making use of technology to do their teaching as suggested below:

We can't run away from the fact that [the] use of technology in the classroom will soon become a common thing. (P8)

The respondents, including participant six generally agree that most of the science teachers that they know do use technology in some way for their work. The various forms of technologies that are used by these teachers include personal laptops, devices such as modems that help to connect to the internet and smart phones among others. The respondents also talked about the need for skill and knowledge for the use of software such as Microsoft Word, Excel, and PowerPoint.

...but I prefer to do it on excel instead because it saves me so much time. I just use the different formulas to carry out my exam analysis. (P6)

An increasing number of teachers are now becoming aware of the various useful computer software that they have at their disposal and among the most popular software are the word processors. While many teachers are familiar with how to navigate through word processing software, there are other categories of useful software tools where more exposure is needed such as spreadsheets and learning management systems.

Sub-theme 3.3: Attitude and Motivation

The issue of time constraints is highlighted as shown below. It is faced by the teachers when trying to cover the course content for the year:

the problem is that many teachers are constantly trying to complete the coverage for the year. We have to keep up with our LTP (Learning and Teaching Program). If we get involved with preparing PowerPoint presentation for every lesson, it will be too time consuming. (P6)

However, another participant has a rather different outlook and suggests that eLearning tools can in fact reduce such stresses on teachers.

... we should use eLearning and just upload all lesson notes online like on Moodle and students can just download it. Then we can just teach in class and not waste time providing lesson notes on the board. (P8)

The negative attitudes of the science teachers towards eLearning needs to be addressed for greater adoption of eLearning approaches to take place. Similarly, the development of knowledge and skill for the use of technology is equally important. Thus, it is evident that there is a need to target the negative worldviews and attitudes of the teachers related to eLearning to improve its level of acceptance.

Themes 4: Institutional Readiness

Institutional readiness is another key theme raised in the interviews with science teachers. Under this key theme, three common aspects were discussed most frequently. These included ICT resource inadequacies, connectivity issues and lack of ICT professional development of teachers.

Sub-theme 4.1: ICT Resources Availability

There were several resource gaps that were provided by the participants such as those quoted below. These included the unavailability of computer labs, inadequate number of computers, the lack of lesson presentation equipment such as multimedia projectors, the internet costs, and also unreliable electricity supply and poor network access in some areas.

...biggest challenge is the costs involved [in purchasing eLearning resources] ... because the [student] populations in our schools keep increasing and it is difficult to look after everyone's needs. (P5)

We had just one [multimedia] projector in school and that is also not working now, so problems like this are always holding us back. (P7)

Understandably, in light of all these resource inadequacies, all the teachers interviewed generally agree that the secondary school science teachers in Fiji cannot be considered to be ready to implement eLearning unless these needs are addressed.

Sub Theme 4.2: Connectivity level.

The level of connectivity in the country has not been rated highly by the majority of the teachers that have been interviewed. Poor internet connections and slow speeds have been said to be a major hurdle for many teachers who want to take advantage of the resources available online. The struggles and difficulties encountered are evident in participants' responses:

... the network is very bad so I have to place my phone at only one place at my home where it [signal] catches. (P4)

The speed is not fast enough to watch videos on YouTube. I know of a lot of scientific videos on YouTube but can't load it on my laptop because of the [poor] speed. (P5)

While many agree that the urban centres do not face this problem in most cases, we see it become more prevalent as we move towards the rural and remote areas. Many students and teachers constantly struggle to stay connected in these areas and it eventually becomes a major cause of frustration and lack of motivation to use these resources. As a result of this difference in connectivity across the country, it would not be possible to have standardized eLearning for every secondary school in Fiji.

If the speeds are poor, it wastes a lot of time and thus becomes pointless. (P1)

It [eLearning] can be unreliable in those areas with poor internet service. (P2)

With these views in mind, connectivity is clearly an important factor that influences the institutional readiness which ultimately is a determinant of the eLearning readiness of the science teachers. While connectivity is gradually improving across the country, there is still much progress to be made.

Sub Theme: 4.3: Professional Development

Furthermore, there is also considerable discussion of the training initiatives for teachers. These are considered by many as vital. Professional development of the science teachers is said to be important in

order to improve their proficiency to execute eLearning teaching methods. At present there is general agreement by the respondents that more needs to be done in this area:

If all the resources are provided and the users are not skilled enough to effectively use it, it [the resources] becomes a waste. (P7)

Moreover, the participant teachers also suggested how these professional developments can be facilitated. Mainly, it is highlighted that professional developments should be facilitated by the MEHA.

One type of professional development that definitely needs to be carried out is the computer usage skills training since it has been highlighted as an important determinant in the eLearning readiness model in the quantitative analysis (Prasad et al, 2021). While the MEHA would have to take the lead in terms upskilling teachers in order to improve eLearning readiness levels, schools can also take initiatives to ensure that all their academic staff have a certain level of basic understanding of computers and their usage.

Theme 5: Teacher Training

Numerous participants felt strongly about certain changes that need to be made in the way teachers are trained and agree that they are still not well trained to develop an eLearning instructional design (Raturi & Kedrayate, 2015). The first major aspect highlighted was the comparisons made between traditional and contemporary teaching methods. Secondly, under this theme, the participants frequently made suggestions on how the eLearning readiness of student teachers can be improved.

Sub Theme 5.1: Traditional vs. contemporary teaching methods

Most of the science teachers felt that there was much emphasis on traditional forms of lesson delivery and little emphasis was given to training these teachers for the use of technology in a classroom. Some recommendations made include:

...training was mainly concerned with manual teaching and there is not much emphasis on eLearning... (P7)

...teaching practicum was more focused on paperwork and our traditional methods were constantly reinforced. (P1)

While many of the teaching methods that they practiced during their microteaching sessions has proven to be useful, methods that utilize eLearning resources such as interactive boards and multimedia projectors were not greatly emphasized. Anxieties with the use of these technologies was said to be a good reason for some teachers not willing to adapt it. One teacher even suggests allowing student teachers to make comparisons of the two forms by demonstrating both teaching styles:

the student teachers can be asked to present their lessons with and without the help of technology and compare to reflect and give feedback... (P8)

There is an ever-increasing demand for teachers to keep up with the contemporary learning needs of the current generation of secondary school learners. This is a generation that is much inclined towards the use of the internet and its associated technologies. Therefore, it is essential that future secondary school teachers are well trained to use this technology in a classroom setting to help the students achieve all the learning outcomes.

Sub Theme 5.2: Improving e-readiness of student teachers.

Further reflections on the teacher training that the participants received reveal some useful recommendations to improving the e-readiness of future teachers. Among the recommendations discussed; inclusion of specialized eLearning course units together with formal assessments of the pedagogy for eLearning implementation was talked about most frequently.

While many teachers agree that teacher training institutes generally do provide course units that teach them about the basics of information technology (IT) usage at university, there is still a need for specialized content that is tailored for teachers so that they are able to get a practice of how to use technology in their classrooms. Though it may not have been as relevant in the past, these specialized content are becoming increasingly essential at present and the science teachers emphasize this fact clearly.

There should be more strategies that expose teachers to eLearning and there should be assessment of [student] teachers on this. (P5)

...student teachers should have been shown how to manage eLearning platforms online for their students. (P6)

Therefore, while the development of conventional pedagogies is ultimately still essential for student teachers, changing times demand for several other important areas such as confidence with eLearning tools to be addressed as well. These teachers thus need to be upskilled in areas such as the development of virtual learning content, hosting courses online, effectively communicating online and preparing video lectures and related contents.

Conclusion

When we look at the implications of eLearning on science education, the teachers interviewed provide valuable insight and based on their lived experiences and reflections of interactions with their colleagues. The five themes that have been discussed show that Fijian Secondary school science teachers do consider eLearning to significantly be able to influence the way they teach science subjects to their students. In order to satisfy the learning needs of their students and those they will teach in the future; the teachers have to have the skills and confidence to facilitate lessons with the use of computers and its related technologies. In fact, the popularity of handheld gadgets among the students nowadays is so great, that many science teachers have agreed that they are constantly facing the growing challenge of competing with the several distractions that their students are overwhelmed with on a daily basis on these gadgets. With the influx of social media usage and online gaming, several useful hours of a student's time are consumed. Opinions raised in the interviews allude to the fact that the best way to get secondary school students more focused towards their studies is to use computer technologies as a tool for their learning.

The interviews revealed both positive and negative perceptions towards eLearning. These opinions hold a lot of value and thus need to be addressed thoroughly. The successful standardised introduction and implementation of eLearning in secondary schools across the country significantly depends on the perceptions of the key implementers; the teachers. Important positive perceptions and attitudes noted were that the majority of the science teachers presently do make use of computers on a daily basis. Similarly, many teachers agree that eLearning is the way forward for the future. Another important positive perception is that the use computers and the internet greatly assist in the teaching and learning of science subjects. The usefulness of eLearning in the teaching and learning of science subjects is an important positive perception that is highlighted both in the interview and the questionnaire. The teachers also speak further on the usefulness of eLearning tools for laboratory practical classes. The negative perceptions that were raised are perhaps more significant since it is important to address these

early to improve the acceptance of eLearning by science teachers when it eventually starts to become common practice. Among the negative perceptions that were raised during the interviews was the fear of time constraints as the teachers cover the course content for the academic year. Resource constraints is another major fear among science teachers whereby it is said that schools are not equipped to handle the needs of a full-time eLearning environment. Meanwhile, connectivity issues are also highlighted by the teachers several on occasions which adds to the complexity of the resource constraints. Therefore, it is seen that the perceptions of these teachers have significant implications on how early eLearning gets accepted at a wider scale. The science teachers have used their experiences in the science classrooms to provide opinions and views that they hold onto quite passionately. The way in which these teachers continuously use examples from their classrooms to emphasize the ideals that they hold towards eLearning is a fair indication that these perceptions and attitudes need to be looked at in great detail. The fears that these teachers express are well justified and therefore it is vital that these negative perceptions are addressed properly.

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Using Codeswitching to Understand the Connection between Fiji Hindi and Standard Hindi

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Abstract

Fiji Hindi (FH) and Standard Hindi (SH) are being used by Fijians of Indian descent (Indo-Fijians); the former has started to develop since the arrival of Indentured Labourers in Fiji. Over the last 100 years, both language varieties/ dialects have served as a medium of communication in informal and formal contexts. This research investigates codeswitching between the two language varieties by examining the grammatical markings on words, the switching mainly occurring on pronouns and verbs for person and number marking, and tense and aspect marking. The research shows that FH speakers codeswitch between FH and SH in formal contexts at varying levels.

Introduction

Codeswitching is a sociolinguistic concept that describes the use of more than one language or grammatical system, usually by multilingual speakers or writers, in the course of a single conversation or written text (Gumperz, 1964 in Nilep, 2006). Codeswitching between two or more languages or varieties provides insights into how language functions for an individual and society. It can be used to understand human languages' 'fluidity' and 'flexibility' and discover the constraints limiting these features. For a speech community, the languages or varieties they use or prefer to use in specific situations reflect these languages/varieties' value. It is also of interest to investigate how systematic is the choice of a particular variety over another. It becomes even more impressive when we find two languages/varieties intermingled in a single conversation or situation.

The diglossic language situation in the Fiji-Indian speech community prompted this research to investigate instances of codeswitching between Standard Hindi and Fiji Hindi in a Hindu religious context, in the setting of *Ramayan*¹ recitals in Navua. Navua is a rural town located in the Central Division of the main island of Viti Levu in the middle of the two provinces – Namosi and Serua, Fiji, with an evenly distributed population of i-Taukei² and Indo-Fijians.

In this specific context, this research aims to:

1. find the occurrence of codeswitching between SH and FH (at word level only);
2. identify and analyse the patterns of codeswitching; and
3. to some extent, justify why the participants may codeswitch.

As the present study looks at two language varieties in a diglossic situation, it is essential to define diglossia. Ferguson (1959, in Nilep, 2006) described diglossia as the existence of a 'divergent, highly codified variety of language, which is used only in particular situations.' It is apparent in the community

¹ I have chosen not to use diacritics for Hindi words rendered in the Romanized script for convenience only as this study focuses on the morphology of the words analysed for codeswitching. Interested readers are referred to Rupert Snell (2016) 'Transliterating Devanagiri' to get a clear sense of the pronunciation of the words (<http://hdl.handle.net/2152/46080>).

² Indigenous Fijians.

studied in this research. The Fijians of Indian descent in Fiji use both Standard Hindi and Fiji Hindi for different situations, and this research is particularly interested in finding samples of the “hybrid code” (Mangubhai & Mugler, 2003, p. 375) when speakers mix both Standard Hindi and Fiji Hindi in their conversations. This research treats Fiji Hindi as a variety of Hindi spoken by Fijians of Indian descent in Fiji and their immigrant communities across the world. Standard Hindi is also treated as a variety of Hindi well accepted in formal education, formal social gatherings, mass media, and public performances. There is no research on the 'hybrid code' referred to by Mangubhai and Mugler (2003), and therefore, this research will aim to describe and analyse it using codeswitching as a demonstration.

Though all Fiji citizens are considered Fijians in the present constitution, this research focuses on the Fijians of Indian descent. The Indians arrived in Fiji during the 19th century as Indentured Labourers. Most of them stayed on after their contracts ended, owning lands, farms, and building businesses, schools, and places of worship. In the literature, the Indentured Labourers' descendants are mentioned as Indo-Fijians, Fiji Indians, Fijian Indians, or Indian Fijians (Devi, 2012). In this project, they are termed Indo-Fijians to differentiate them from the general Fijian population. Fiji is a secular state (Talei, 2018), and several groups belong to various Christian, Muslim, and Hindu denominations.

Background

Codeswitching

Liebscher and Dailey-O'Cain (2004 in Mabule, 2015, p.340) defined codeswitching as “the alternate use of two or more languages in the same conversation usually within the same conversational turn, or within the same sentence or within the same sentence of that turn. The research on codeswitching can be traced as early as 1917 in the United States when Espinosa studied the Spanish-English codeswitching and concluded that “there was no rationale for code-switching, and that code-switching was just a random mixture of the languages available to the bilingual speaker” (Kamwangamalu, 1997, in Moodley, 2001, p.14).

Blom and Gumperz (1986 in Moodley, 2001) elaborated extensively on situational and metaphorical codeswitching to describe the types in their interactional approach. Situational switching involves a change in participants in the conversation or the strategies they use, triggered by external factors to the speaker's motivation (Myers-Scotton, 1993), while metaphorical switching is related to specific topics discussed by the same participants in the same setting. This approach has been criticized by Auer (1984), and Scotton (1983 in Myers-Scotton, 1993) for its lack of clarity in defining the two notions of situational and metaphorical switching. Scholars, however, accept that codeswitching is a common phenomenon in the language of bilingual and multilingual speakers in many places and that it cuts across the societal, ethnic, age, and professional spectra.

Codeswitching between dialect and standard language has rarely been discussed. Here we mention two exceptions. Firstly, Gumperz (1958) researched codeswitching in India and later in Norway with Blom. He looked at the alternations between Hindi and Punjabi, discovering that different lexical items had been retained in each language for specific functional purposes, whereas the grammatical systems have converged. Blom and Gumperz (1972 in Nilep, 2006) studied the use of two dialects, standard literary Bokmal and local Ranamal in Hemnesberget, a small settlement in Northern Norway, and their detailed analysis of the functions of the two dialects in Hemnesberget has become “a touchstone in codeswitching research” (Nilep, 2006, p. 5). This documented alternation between the 'higher' and the 'lower' variety

with codeswitching between them fulfils specific functions and demonstrates societal ideologies. Another exception is Giesbers' (1989) dissertation on code-switching between dialect and standard language in a village in the south of the Netherlands. Giesbers applies codeswitching principles to a language contact situation different from those in the bilingual communities in most research. These two studies (Blom & Gumperz, 1972 and Giesbers, 1989 in Nilep, 2006) provide insights for the present research on the codeswitching between Standard Hindi and Fiji Hindi.

Research on codeswitching between Hindi and English has been done by Bhatt (2008, in Anderson, 2014). For over five years, he looked at two English medium Indian newspapers, for instance, codeswitching between Hindi and English. He demonstrated that the codeswitching was done to create a 'third space' (a phenomenon developed by Bhabha (1994, in Anderson, 2014). Anderson (2014, p. 16) states that codeswitching acts as a third space, representing "a sphere of identity between a speaker's native language and his or her second language."

Kachru (2006 in Anderson, 2014) studied Hindi-English codeswitching in popular Hindi music. Si (2010 in Anderson, 2014) observed the changes in codeswitching patterns in Bollywood films. Though the present research is not looking at Hindi-English codeswitching, a mention of some research on Hindi-English codeswitching can prove helpful to understand the nature of Hindi, which has undergone stages of Sanskritization, Persianization, and 'Englishization' and in the context of Fiji Hindi, the process of 'Fijianization' as well.

Standard Hindi and Fiji Hindi

The term 'Hindi' refers to the chain of mutually intelligible dialects (Gumperz & Nain, 1960, in Barz & Siegel, 1988) belonging to the Indo-Aryan family of languages, a subgroup of the Indo-European family (Banarsidas, 1989). With other standard and non-standard varieties of languages such as Bengali and Gujarati, Hindi derives its roots from Sanskrit and, over time, developed further through contact with Persian and English during Mogul and British colonization. *Khadi Boli*, the form of Hindi used in the capital of Delhi in India, is considered the standard variety due to its use in politics and literature. In contrast, other non-standard varieties remain part of the communication repertoire of the general public across India (Sharma, 1988). Gumperz (1961, p. 28) describes eloquently the situation of language use in India, which may remain applicable to present times to a reasonable extent.

The development of Fiji Hindi in the plantations in Fiji amongst the Indentured Labourers (from different regions in India) and through contact with the indigenous language and the English language is thoroughly documented by Moag (1977) and Siegel (1973, 1985, 1988, 1998). Other works on Fiji Hindi include a dictionary by Hobbs (1985). Pillay (1975) wrote a phonological comparison of Fiji Hindi and Standard Hindi for his Master's thesis, developed further by Moag later. Singh (2008) looked at codeswitching between the native language (Fijian) and Fiji Hindi and how it gave space for a pidginized version of Fijian for the Fiji Indians and a pidginized version of Fiji Hindi for the Fijians. Prasad (2016) produced a grammar sketch of the Fiji Hindi spoken in his hometown. Shameem (2004, p. 4) aptly summarizes the language use of the Indo Fijians as follows:

(they) also spoke a range of languages, North Indian dialects of the Indo-Aryan language family and the Dravidian languages. In order to communicate with fellow labourers, the first immigrants developed a lingua franca on the plantations: Plantation Pidgin Hindi,

which was to form the basis of the mother tongue of modern day Indo-Fijians – Fiji Hindi. Fiji Hindi (FH) is a pre-literate, unstandardised language, which has low status not just in the wider community but also among the speakers themselves.

Both Moag (1977) and Siegel (1973) make the point clearly on the existence of two primary varieties of Hindi functioning in Fiji's Hindi-speaking community. They note that Fiji Hindi is considered a “corrupted and non-standard form” of the language used only for spoken and informal purposes while highlighting Standard Hindi's role in “Hindu worship, broadcasting, newspaper, and literature in both India and Fiji”. In schools, only Standard Hindi is taught” (Moag, 1977, p. 44). Shameem (2004, p. 4) also states that “the relationship between FH and SH can be seen as an in-diglossic one, where FH is the native variety and SH the superimposed one.” A point to note is that while Moag mentions that Standard Hindi is used in Hindu worship, there are undocumented observations that Hindi-speaking Muslims and Christians use it during their religious functions. For instance, Geraghty (2021) comments on the use of Hindi in the local Bible translations as neither SH nor FH but ‘something in-between the two.’ More research would be needed to verify the claims.

Though Standard Hindi and Fiji Hindi share numerous similarities, this research considers them two different varieties –Standard Hindi as the upper variety used in formal contexts and Fiji Hindi as the lower variety used in informal contexts. Each variety has numerous sub-varieties. In this research, Standard Hindi is considered the *Khadi Boli* just as it is in India. The Fiji Hindi analysed is the Navua dialect (Central Division) of Fiji Hindi, slightly different from the Fiji Hindi spoken in Fiji's Western or Eastern Divisions. For religious and formal purposes, the Indentured Labourers gave importance to Standard Hindi. This means that the labourers who came from India did speak bits of Bhojpuri, Awadhi and Bazaar Hindustani and had knowledge of Standard Hindi (Barz & Siegel, 1988). The text, for example, used in this research – the *Ramcharitmanas* is written using the Devanagari script and has been read by Hindu Girmityas and their descendants in Fiji from as early as the 1900s (Sanadhya, Kelly, & Singh, 2003, Sharma, 1998, Sharma 2004).

After the end of Indenture, the Indian labourers started building homes, schools, and temples/ mosques with the establishment of some prominent religious organizations, such as the Sanatan Pratinidhi Sabha Fiji (1958 in Prasad, 2008), Arya Samaaj of Fiji (in 1918, online), TISI Sangam Fiji and Fiji Muslim League (in 1926, online). Hindi and Urdu, together with Fijian and English, became subjects in schools that were considered essential for social and academic progress. Hindi and Urdu are still part of the school curriculum in the country where they are called ‘vernacular’ languages, in contraposition to English. Nevertheless, both languages experience a drastic decline in students taking the vernacular languages as subjects after Year 8. However, the decline is also due to the dominance of English as stated in Shameem (2007, p. 40) in “all 24 observed classrooms, English was the dominant language of instruction (and that) there is an important need in Fiji for teacher training to address the issues around multilingual education so that teachers can confidently contribute to an educational system which maximises the use of Fiji’s linguistic resources for the educational advancement of all sectors of the country’s population.” A significant challenge for both Hindi and Urdu learners is to learn the Devanagari and Arabic writing styles.

A point to note is that Moag mentions that while Standard Hindi is used in Hindu worship, it is also used by Hindi-speaking Muslims and Christians during their religious functions. Domains of use that have not been recorded so far though examples can be found in radio programmes such as in the Hindi station, Radio Fiji Two, where there is a slot for religious preaching every morning from 4 am to 6 am and preaching from the three main religions are done in Standard Hindi (researcher observation). There is no doubt that

Standard Hindi has a prestigious position in religious events, raising concerns as to why Fiji Hindi is used in public performances such as the *Ramayan* ceremony.

Methodology

Most studies in codeswitching have generally been qualitative. It is because of the use of ethnographic theoretical frameworks to describe two languages or varieties in random and regular speech events. However, this research is conducted using concurrent procedures of mixed approach (Creswell, 2003 in Hernández-Campoy, 2014) to provide a comprehensive analysis of the data collected. This study is a quantitative investigation based on a smaller corpus and a qualitative analysis based on in-depth morpho-syntactic investigations of particular structural areas of interest for the research question to identify and analyse codeswitching patterns between SH and FH by speakers in a specific social context.

Data collection

Samples for this study were collected from two different *Ramayan mandalis* in Navua recorded at two different locations. One is a weekly recital in a *Ramayan mandali*. The narrator is a priest who managed to explain the details in his own words instead of relying only on the written text as done mostly in other *mandalis*. The other recording was a recital at a family home that hosted the event to spiritually celebrate a loved one's birthday. It is common in Fiji Hindu homes to host the *Ramayan* annually at home or whenever there is a birthday or wedding or to mark the end of the mourning period after a death in the house. In this recording, the narrator was also a priest, and he tried to contextualize and make his presentation appealing by adding discussions that were quite comfortably done in Fiji Hindi. Both the *pracharaks* and some people from the audience were informally interviewed on their language choice during presentations. Their answers have been used to explain and provide justifications necessary for the discussion section.

Data Analysis

After transcribing the recordings, words, phrases and sentences were highlighted where the use of FH was noticed. Given the limited scope of this study, only word-level codeswitching is further analysed. The markers identified in the data are verb-markers for tense, number, and aspect and pronoun-markers for 1st, 2nd, and 3rd person (postposition suffixes). In FH, the postposition marker */-i/* on the verb indicates 3rd person, singular, and future while in SH, it will be the postposition */-ega/* for the same marking. In FH, pronouns usually have the same postposition for 2nd and 3rd person marking, */-ke/*, while SH has */-ka/*. The markers for pronouns that function as determiners to the head noun of a noun phrase were also considered as they have distinct marking systems in SH and FH. The pronouns as determiners and markers are presented here as an illustration.

Pronouns as determiners

Example 1

FH Ham-a ghar
 I-POSS HOUSE

SH Mera ghar
 IPOSS HOUSE

My house

Example 2

FH Tum-a ghar
 YOU-POSS HOUSE

SH tum-hara ghar
 YOU-POSS HOUSE
 Your house

Example 3

FH us-ke ghar
 THAT (ONE)-POSS HOUSE

SH us-ka ghar
 THAT (ONE)-POSS HOUSE
 That one's house.

Verb-marking for Tense

Example 4

FH *Aatma kabhi nai mar-e*
 SOUL EVER NO DIE-PRES,SING

Instead of

SH *Aatma khabhi nahi mar-ta*
 SOUL EVER NO DIE-PRES,SING
 Soul never dies.

Verb Marking for Number and Tense

Example 5 (FH)

a. *Ham khana kha-ya*
 I FOOD EAT-PAST, SING
 I ate food.

b. *Ham khana kha-ta*
 I FOOD EAT-PRES, SING
 I am eating food.

c. *Ulong khana kha-is*
 THEY FOOD EAT-PRES,PLURAL

They ate food.

d. *Ulong khana kha-e*

THEY FOOD EAT-PRES, PLURAL
They are eating food.

b. *Mae khana kha raha hoon*

I FOOD EAT IS PRES
I am eating food.

c. *Unlog-o ne khana kha-liya*

THEY-SUB,PL FOOD EAT-PAST
They ate food.

Example 6 (SH)

a. *Mae-ne khana kha-ya*

I-SUB FOOD EAT-PAST
I ate food.

d. *We khana kha rahe hai*

THEY FOOD EAT ARE PRES
They are eating food.

Pronoun Markers (Possessive Pronouns as Determiners)

	FH	SH
1 st	<i>ham-a</i>	<i>me-ra</i>
2 nd	<i>tum-a</i>	<i>tum-hara</i>
3 rd	<i>us-ke</i>	<i>us-ka</i>
3 rd distal	<i>ulong-ke</i>	<i>un-ka</i>
3 rd proximal	<i>ilong-ke</i>	<i>in-ka</i>

Demonstrative Pronouns

	FH	SH
This	<i>ee</i>	<i>ye</i>
That	<i>oo</i>	<i>wo</i>

Verb-marking (Suffixes and Copulas)

	Number	Tense	Aspect
FH	<i>-in, -le</i>	<i>-e, -eg(a), -i, -is,</i>	<i>-k, ra, hae, hoi</i>
example in word use	<i>kar-in, kar-le</i>	<i>kar-e, kar-eg (a), kar-i, kar- is</i>	<i>Kar-e-k, kar-a-ra, kara-hae, kar-a- hoi, kar-is-hoi</i>
SH	<i>raha, rahe</i>	<i>hae, tha, - unga, -enge</i>	<i>hoga, honge</i>
example in word use	<i>kar-raha hae, kar- rahe hae</i>	<i>kart-a hae, karta tha, karunga, karenge</i>	<i>kar raha hoga kar-a hoga kiya hoga kar-rahe honge</i>

Limitation

This study is small and may not be complete enough to generalize³ to the whole of Fiji about FH and SH's use and their codeswitching. The results are also influenced by the participants' age, professional and educational backgrounds. Gender is also an exciting factor that would need further investigation. Both participants are male, as is the norm in most religious discourse. There are very few *Ramayan* sessions where women do the narration. There are also chances of gender bias when deciding if everyone who speaks SH in Fiji does codeswitching with FH; even if they do, the patterns presented in this study may be different.

³ There are groups who would not accept the use of FH in a religious discourse and others who do – this topic is of interest for more research on language attitude – however, this study focusses on communities where it has been observed. Even then, this study is sensitive in nature – which explains the limited number of recordings.

Results

Figure 1 shows the occurrences of word categories in Fiji Hindi and Standard Hindi represented as percentages. In the sample, we find the speakers to be using slightly more FH verbs (endings) compared to SH (verb endings) with a difference of approximately 1.5%, which may not be a high number, but the fact that the speakers preferred FH verb markings rather than SH verb markings indicates their preference to use FH.

For pronouns, it is found that the speakers are using more SH than FH. This seems to be influenced by the ceremony's context as the speakers narrate stories and refer to characters.

More FH determiners are used.

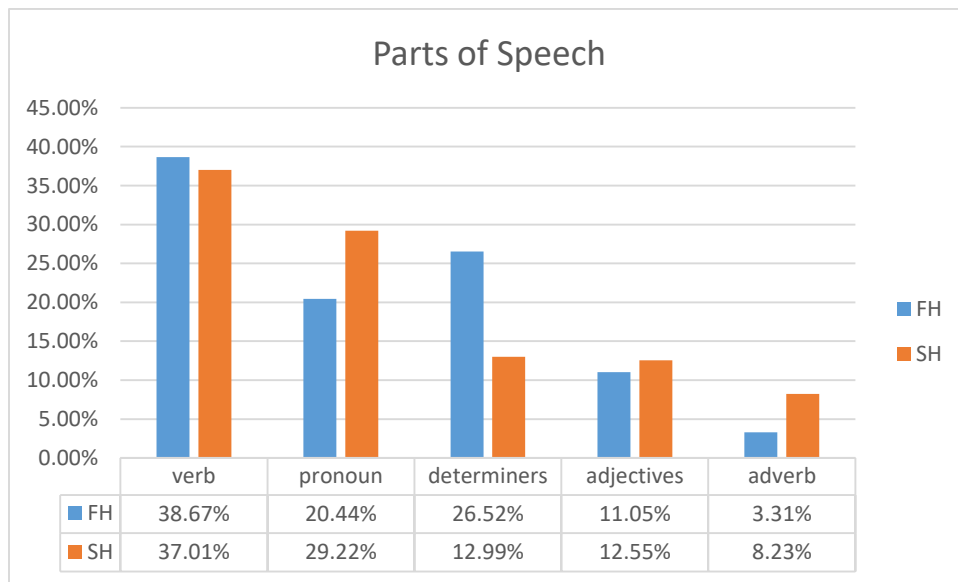


Figure 1 Comparative look at the Word Categories in the datasets

Figure 2 shows the occurrences of Person-Marking in Fiji Hindi and Standard Hindi, calculated as percentages. The graphs show that the speakers maintained the use of SH markings for the first-person pronoun with a difference of approximately 4.5%, while it is slightly reduced for the second person with a difference of 1% and the third person, it is reduced by approximately 3% which indicates the speakers' preference to use FH person-marking.

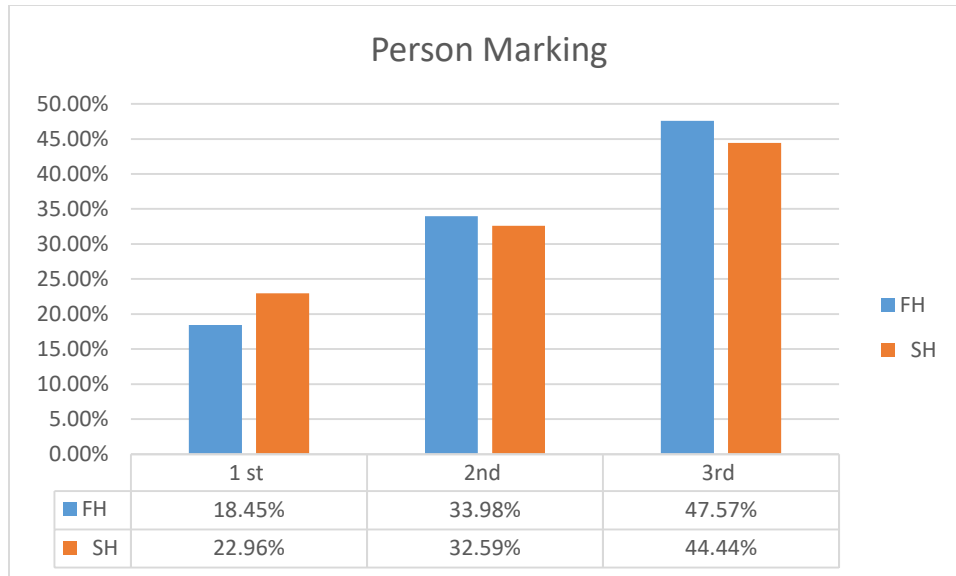


Figure 2 Comparative look at Person Marking in the datasets

Figure 3 show the occurrences of number marking in Fiji Hindi and Standard Hindi in percentages. As per the analysis, the speakers have preferred to use FH singular marking with a difference of approximately 18%. They used more SH plural marking with a difference of a similar value of 18%. It also needs to be noted that the speakers have used more singular pronouns than plural pronouns, with a difference of more than 50% and 23% for FH and SH, respectively.

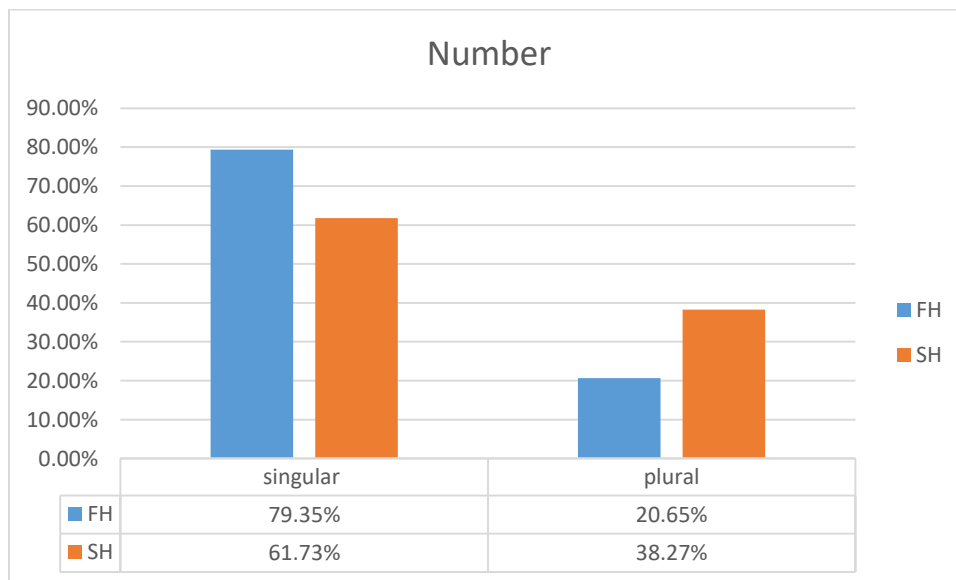


Figure 3 Comparative look at Number Marking in the datasets

Figure 4 shows the occurrences of tense marking on verbs in Fiji Hindi and Standard Hindi as percentages. Tense marking on verbs for FH and SH is done using different suffixes. According to the sample, the

speakers have maintained to use tense marking in both the varieties (FH and SH). There is a slight difference of approximately 2% using more SH markers than FH markers for past and present tense while using about 4% more FH future tense marking. It can also be noted that the speakers are using less present tense as they only do so when referring to present times, which is not common in a recitation of a historical text. It was surprising to see the use of more future tense marking, but when carefully analysing the text, it is seen that there are many inconsistencies in tense marking while the speakers narrate the story at times. Some events which have already happened are sometimes referred to in the future tense in the storyline.

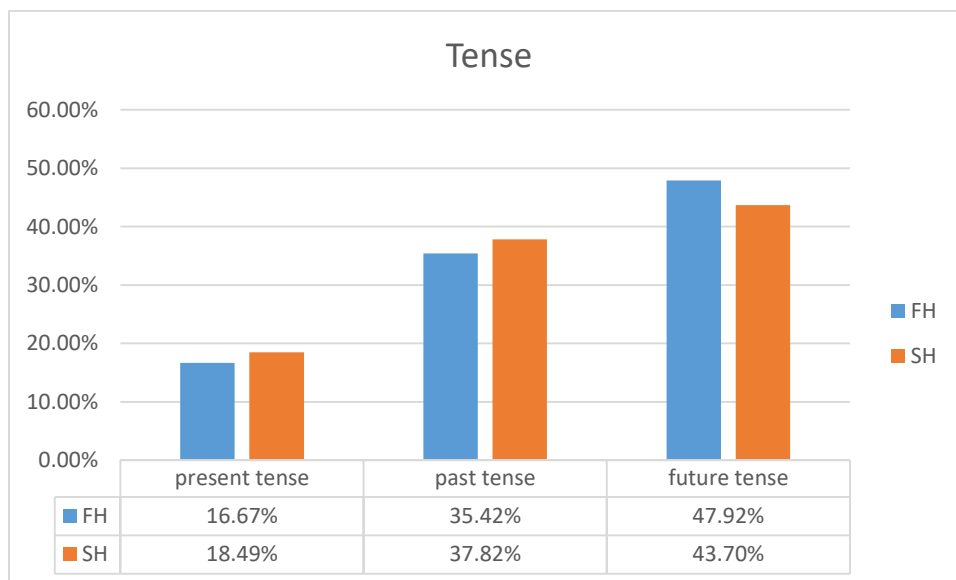


Figure 4 Comparative look at Tense Marking in the datasets

Finally, Figure 5 shows aspect marking in Fijian and standard Hindi, again as percentages. For aspect marking, only those aspects which were identified in the samples are being analysed. There are no high discrepancies between the choice of using FH aspect marking or SH aspect marking. For possessive and proximal, it is noted that the speakers used more SH marking, while for a question, distal and inclusive, they preferred to use more FH marking. This can be interpreted as indicating the speakers' ability to distinguish aspect markers in both FH and SH. They are switching from one to the other for some special reasons. One of the key reasons is that the narration is of a story with commentary, so in the storyline, the narrators prefer to use SH while making commentaries, they switch to FH.

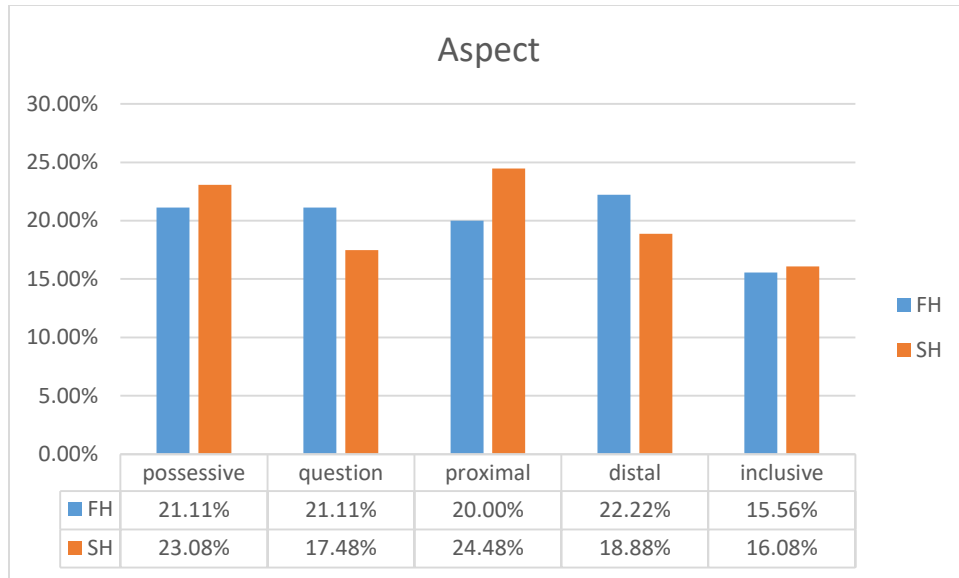


Figure 5 Comparative look at Aspect Marking in the datasets

Discussion

Codeswitching instances in verb-marking

Figure 3 in the previous section shows Fiji Hindi terms divided according to the word categories. It is seen that the participants have used more Fiji Hindi verbs (38.67%). However, it needs to be noted that the terms (root words) are the same for both Fiji Hindi and Standard Hindi, and the distinction is made on the choice of markers/ adpositions used with the verbs. In this case, the speaker uses Fiji Hindi verb-endings, and thus the verb is assumed to belong to Fiji Hindi.

Example 1

Lakshman **bol-is** *bhaiya* *ham* *aap-ke* *saath* **chal-ega**
 LAKSHMAN SAY-1ST, PAST BROTHER I YOU-POSS, WITH GO-FUTURE,SING

Instead of

Lakshman *bol-a* *bhaiya* *mai* *aap-ke* *saath* *chalunga.*
 LAKSHMAN SAY-PAST BROTHER I YOU-POSS WITH GO-FUTURE, SING

Lakshman said brother I will come with you.

In this example, the verbs *bol-is* and *chal-ega* have Fiji Hindi endings (past and future marking respectively), and hence they are taken as Fiji Hindi verbs and not as Standard Hindi verbs. This can be a case of listener accommodation.

Example 2

Aatma kabhi nai mar-e.

SOUL EVER NO DIE-PRES CONT, SING

Instead of

Aatma khabhi nahi mar-ta

SOUL EVER NO DIE-PRES CONT, SING

Soul never dies.

The speaker's choice to use Fiji Hindi present continuous verb-ending '-e' in place of Standard Hindi '-ta' for 'mar' (die) supports the hypothesis of this research. This can be an example of simplification (deletion of /t/ and change of /a/ to /e/).

Example 3

Sita-ji Ram-ji ka rasta tak-ti hae.

SITA-HONORIFIC RAM-HONORIFIC POSSISIVE ROAD SEE-F,SING IS

Instead of

Sita ji Ram ji ka rasta dekh-ti hae.

SITA-HONORIFIC RAM-HONORIFIC POSSISIVE ROAD SEE-F, SING IS

Sita is waiting for Ram.

Speaker two uses the Fiji Hindi verb 'tak-ti' instead of the Standard Hindi verb 'dekh-ti.' However, the feminine marker 'ti' is Standard Hindi, and in its complete Fiji Hindi form, the verb is 'take' and not 'takti.' This can be an example of listener accommodation as the term 'tak-ti' is more commonly used by everyone in the audience.

Example 4

Kisi-ko manavta ka parvah hai-e nai.

SOMEONE-SUBJ HUMANITY POSS CONCERN-SING IS-EMPH NOT

In comparison to

Kisi-ko manavta ki parvah hai-hi nahi.

SOMEONE-SUBJ HUMANITY POSS CONCERN-SING IS-EMPH NOT

There is no concern for humanity in anyone.

'*Haie nai*' in Example 10 is a more straightforward way of saying '*Hai hi nahi*' (is not there). '*Haie*' becomes a simplified Fiji Hindi version of '*Hai Hi*' (two words merged as one) while '*nai*' becomes of '*nahi*' (deletion of the/h/ sound). The speaker prefers to use the Fiji Hindi verb with a negative case because it will have a more substantial pragmatic effect on the audience, such as when emphasizing a point.

Example 5

'ya-ao'

HERE-COME-IMP

instead of

'yaha aao'

HERE-COME-IMP

'Come here.'

Example 6

Sugreev Ram ki agya ke pratiksha **kar-i.**

SUGREEV RAM-POSS ORDER PP WAIT FOR DO-FUTURE, SING

Sugreev Ram ki agya ka pratiksha **kar-ega.**

SUGREEV RAM-POSS ORDER PP WAIT FOR DO-FUTURE, SING

Sugreev will wait for the orders from Ram.

Speaker two uses Fiji Hindi future marking on the verb *Kar-i* instead of Standard Hindi *Kar-ega*. In Fiji Hindi, *-ega* suffix on the verb indicates that the subject of the sentence is 1st person singular, while the *-i* suffix on the verb indicates that the subject of the sentence is 3rd person and can be plural as well. *-i* can only be 1st person in a question form. By switching to Fiji Hindi verb marking, the speaker is keeping the audience excited by his ability to experiment with the grammatical restrictions of Standard Hindi and embedding Fiji Hindi for their ease of understanding.

Example 7

The use of *-ega* as a suffix on the pronoun for future marking:

A) Fiji Hindi

1 st Person	ham ja- <i>ega</i>	I will go.
2 nd Person	tum ja- <i>ega</i>	You will go.
3 rd Person	u ja-i	He/She/ That one will go.

B) Standard Hindi

1 st Person	Maija- <i>unga</i>	I will go
2 nd Person	Tum ja- <i>oge</i>	You will go
3 rd Person	woh ja- <i>ega</i>	He/ She/ That one will go.

Fiji Hindi uses the 3rd person future marking from Standard Hindi as the 1st and 2nd person future marking and introduces ‘-i’ as a 3rd person future marking which Bhojpuri influences.

There is no change for imperative marking on the verb. In both Standard Hindi and Fiji Hindi, the suffix ‘-o’ marks imperative on the verb, as shown in Example 11.

Example 11

verb	gloss
Dekh- <i>o</i>	see
Khaa- <i>o</i>	eat
Piy- <i>o</i>	drink
Nach- <i>o</i>	dance
Kudh- <i>o</i>	jump
Pakaa- <i>o</i>	cook
Likh – <i>o</i>	write

As a question marker, standard Hindi 'kya?' is replaced with Fiji Hindi 'konchi?'. As part of the narration of the text, it is common to find speakers asking questions, at times, rhetorical questions to the audience. In the dataset, there are four instances when the speakers use:

Example 12

Konchi	What
Konchi bhe	What happened
Konchi bolis	Said what?
Konchi maangis	Asked what?

For the audience, the speakers' ability to blend in Fiji Hindi into the speech tends to be amusing and keeps them lively. 'Konchi' is an example of a merger in Fiji Hindi, which comprises 'kon' (what) and 'cheej' (thing). 'Konchi' is used as a question mark and functions as an adverb as well with the meaning 'what thing?' Or 'which thing?'. These rhetorical questions were asked in Fiji Hindi as the narrator directly communicated to the audience rather than reading from the text.

Example 13

FH Konchi bhe?

SH Kya hua?

What happened?

FH Konchi kharta?

SH Kya kar rahe ho?

what are you doing?

FH i konchi?

SH Ye kya hae?

What is this?

FH tuma paas konchi hae?

SH Tumhare paas kya hae?

What do you have?

Example 14 illustrates FH tense marking on the verb. There are only six suffixes for the three tenses for all three persons, including the number in Fiji Hindi, while in Standard Hindi, there are fifteen different markers for each tense, number, and person.

Example 14

Person	Past tense	Present tense	Future Tense
1 st & 2 nd Singular/Plural (Ham, Tum)	-ra (ge- <i>ra</i> , khae- <i>ra</i> , bole- <i>ra</i>)	-ta hai (ja- <i>ta hai</i> , kha- <i>ta hai</i> , bhol- <i>ta hai</i>)	-ega (ja- <i>ega</i> , kha- <i>ega</i> , bol- <i>ega</i>)
	I went, I ate, I said	I am going, I am eating, I am saying	I will go, I will eat, I will say
3 rd Singular/Plural	-is⁴ (u ga- <i>is</i> , u kha- <i>is</i> , u bol- <i>is</i>)	-e (hai) (U ja- <i>e hai</i> , u kha- <i>e hai</i> , u bol- <i>e hai</i>)	-i (u ja- <i>i</i> , u kha- <i>i</i> , u bol- <i>i</i>)
	he/they went, he/they ate, he/they said	He/they are going he/they are eating he/they are saying	He/they will go He/they will eat He/they will say

Example 21: SH tense marking on the verb

Person	Past tense	Present tense	Future Tense
1 st Singular	-(y)a tha (ga-ya tha, kha-ya tha, bol-a tha) I went, I ate, I said	-raha hu (ja raha hu, kha raha hu, bhol raha hu) I am going, I am eating, I am saying	-unga (ja-unga, kha-unga, bol-unga) I will go, I will eat, I will say

14. These markings are also found in Awadhi

Example

Kukur dhires a-is

(The) dog came slowly.

plural	-(y)e the (ga-ye the, kha-ye the, bol-e the) They went, they ate, they said	-rahe hai (ja rahe hai, kha rahe hai, bhol rahe hai) They are going, they are eating, they are saying	-enge (ja-enge, kha-enge, bol-enge) They will go, they will eat, they will say
2 nd Singular / Plural	-(y)e the ga-ye the, kha-yea the, bol-e the) You went, you ate, you said	-rahe ho (ja rahe ho, kha rahe ho, bhol rahe ho) You are going, you are eating, you are saying	-oge (ja-oge, kha-oge, bol-oge) You will go, you will eat, you will say
3 rd Singular	-(y)a tha (ga-ya tha, kha-ya tha, bol-a tha) He went he ate he said	-raha hai (ja raha hai, kha raha hai, bhol raha hai) He is going he is eating he is saying	-ega (ja-ega, kha-ega, bol-ega) He will go He will eat He will say
3 rd Plural	-(y)e the ga-ye the, kha-yea the, bol-e the) They went, they ate, they said	-rahe hai (ja rahe hai, kha rahe hai, bhol rahe hai) They are going, they are eating, they are saying	-enge (ja-enge, kha-enge, bol-enge) They will go, they will eat, they will say

The use of nasalized *hae* and denasalized *hae*. These can be taken as an example of simplification. In Standard Hindi, for plural *hae* is nasalized but not in Fiji Hindi. The speech samples in this study do not show any use of the nasalized *hae*, even with plural subjects.

Interestingly, the participants prefer to use Fiji Hindi verb markers because they are simple. Looking at the history of the use of codeswitching in the literature review (Gumperz, 1982, Kachru, 1983 in Nilep, 2006), most researchers agree that a reason why people tend to code-switch is to use a simpler version in their conversation for their comfort as well as of their audience.

Instances of codeswitching in the text where the Fiji Hindi verb marking is used in the Standard Hindi conversation are shown here:

Example 15

U bol-e bhaiya kidhar jana hai?

THAT SAY-PRES, SING BROTHER WHERE GO IS-QUESTION

That one said, brother where do we have to go?

Example 16

Atma kabhi nai mar-e.

SOUL EVER NO DIE-PRES, SING

Soul never dies.

Example 17

Bharat Ram se milne van me ge-ra.

BHARAT RAM OBJ, SING MEET FOREST IN GO-PAST, SING

Bharat went to the forest to meet Ram.

Example 18

Jo hona tha woh toh hoi-ge.

WHAT HAPPEN WAS THAT SO HAPPEN-PAST, SING

Whatever happened, it had to happen.

Codeswitching in the use of Pronouns as Determiners

Figure 3 shows that 26% of the Fiji Hindi vocabulary used are determiners. Most are demonstrative pronouns, and they are classified in this research as determiners rather than pronouns to maintain the clarity in the formation of these words and the meaning they carry for the speakers.

Example 19

Ham-*a* ghar My house

Tum-*a* ghar Your house

Us-*ke* ghar That one's house

Is-*ke* ghar This one's house

The plural marker for all forms of demonstrative pronouns is ‘-ke’ together with the ‘-ong’ suffix for 1st and 2nd persons and a ‘-long’ for 3rd person. In some versions of Fiji Hindi, ‘-long’ is also used for the 1st and 2nd person pronouns.

Example 20

Ham-ong-ke ghar	Our house
Tum-ong-ke ghar	You (people’s) house
U-long-ke ghar	Those (people’s) house
I-long-ke ghar	These (people’s) house

In comparison, the demonstrative pronouns in Standard Hindi are as follows:

Example 21

Mer-a ghar	My house
Tum-hara ghar	Your house
Us-ka ghar	That one’s house
Is-ka ghar	This one’s house
Ham-ara ghar	Our house
Tum-logo-ka ghar	You (people’s) house
Un-ka ghar	Those (people’s) house
In-ka ghar	These (people’s) house

These examples indicate that Fiji Hindi speakers' demonstrative of 1st person singular pronoun is similar to the 1st person plural pronoun from Standard Hindi. Also, since Fiji Hindi does not have gender marking on either the verb or the possessive pronouns/ demonstrative pronouns, a generic ‘-ke’ is used instead of ‘-ka’ and ‘-ki’ from Standard Hindi. Speakers used singular pronouns, but this is expected since our sample is a narration from the Ramayana where the speaker refers to one character most of the time. The speaker uses plural pronouns only when referring to more than one character or directing his speech to the audience.

Example 22

Object pronouns in Fiji Hindi

Fiji Hindi	Book ham- <i>me</i> do	Give the book to me
	Ham book tum- <i>me</i> dega	I will give the book to you
Standard Hindi	Book mujh- <i>e</i> do	Give the book to me
	Mai book tum- <i>he</i> de dunga	I will give the book to you

In Example 22, the object marking on the pronoun is a double ‘*m*’ with ‘*e*’ in Fiji Hindi while it is ‘*e*’ and ‘*he*’ respectively in Standard Hindi. The reduplication feature in Fiji Hindi is typical of many of the eastern varieties of Hindi in India, such as Awadhi and Bhojpuri, which are closely related to Fiji Hindi (Seigel, 1987).

According to Figure 2 the sample consists of 18.45% 1st person pronoun ‘*ham*,’ 33.98% 2nd person *tum*, and 47.57% 3rd person *oo* and *ee*. Apart from the Fiji Hindi pronouns, 25.52% of the determiners in the Figure 9 are demonstrative pronouns like *ee* (this), *oo* (that), *yai* (this one) which makes the total percentage for the use of Fiji Hindi pronouns to 40.44 % and thus it becomes the largest number of FH items used in the SH corpus. As mentioned earlier, the 3rd person pronouns have also been used as determiners several times.

As seen in Figure 2, the speaker’s choice to use Fiji Hindi pronouns instead of Standard Hindi pronouns is interpreted as identity negotiation. Identity negotiation is part of social identity theory in which social (or socio-cultural) identities can include ethnic membership identity, social class identity, to family role issues, and personal identities can include any unique attributes that we associate with our individuated self in comparison to those of others (Toomey, 2015). Using FH pronouns in the formal setting affirms that the speaker is still part of them and not an outsider. If Standard Hindi pronouns supposedly replaced all these pronouns, the audience may not connect as deeply with the narrator as they are doing so now.

Pronouns are significant indicators of person-to-person relationships. The speakers’ choice of pronouns reflects how close or distant they are from the audience, which is vital for public speaking when the participants want to narrate the story and impress the audience with their storytelling abilities⁵.

According to the participants’ interview and an overall observation in the *Ramayan* ceremony, using Fiji Hindi or any other language in the discourse is not encouraged for some conservative groups as it is taken to ‘pollute’ the language. However, there is a growing interest, especially in the youth-oriented mandalis, to become more flexible with language and allow more creativity. It can be assumed that codeswitching

⁵ In the Ramayan mandalis, the pracharak position is prestigious and competitive. At times they are treated as celebrities, and their popularity depends on how appealing they are to their audience.

is one of the creative ideas to excite the audience. This is supported by Kharkhurin and Li (2014) as they confirmed the primary hypothesis of their study by showing greater innovative capacity in bilinguals who code-switch frequently and regularly compared to their counterparts who do not code-switch in their everyday practice.

Figure 2 shows that the participants use more singular pronoun markers. While speaking in Standard Hindi, participants used the Fiji Hindi pronoun system without using the Standard Hindi adpositions. This happens when the speakers address the audience compared to reading or narrating the text, where they switch to using the Standard Hindi adpositions. One of the key reasons is that the narration is of a story with commentary, so in the storyline, the narrators prefer to use SH while making commentaries; they switch to FH perhaps for the ease of their audience.

Example 23

Mae ne puja ki

I SUB-DOER PRAYER DID

(while narrating the story)

And

Example 24

Ham puja kara

I PRAYER DID

I prayed.

(while addressing the audience)

The postposition *ne* in the first example (Standard Hindi) is deleted in the second example (Fiji Hindi). The most common pronouns used in the samples are *ee* (this) and *oo* (that). These pronouns are used for 3rd person singular and as demonstrative. Figures 13, 14, and 15 indicate the various aspect marking in varying degrees as the speakers switch between Fiji Hindi and Standard Hindi.

Conclusion

In conclusion, this study's main aim was to show whether there is codeswitching between Standard Hindi and Fiji Hindi in the context of *Ramayan* recital. The reasons for choosing the *Ramayan* recital as a case study were that the event is a formal religious setting where the standard variety is preferred. If speakers use Fiji Hindi elements in such an event, one can expect an increasing use of Fiji Hindi at less formal events such as weddings, parties, and funerals. This research has investigated both FH and SH; both these varieties have been part of the Indo-Fijian identity since the Girit era; it is hoped that it may help combat the negative attitudes towards Fiji Hindi as there remains an ongoing debate on accepting it as a language (Willans & Prasad, 2021; Kumar, 2010; Kumar, 2020). This study shows how SH and FH co-exist in the Indo-

Fijian speech community. The decrease in children and youths' interest in studying SH can be linked to the fact that FH remains their first language (Kumar, 2017; Willans & Prasad, 2021), and English is preferred to be the second language due to the academic and career requirements. SH is not prioritized as it is difficult, and if FH is incorporated in the teaching of SH, then students might take interest. The code-switching between FH and SH can be a captivating way to teach them about the varieties and languages. Furthermore, when we learn about language, we learn about the society that speaks it and the culture that shapes it. Language is not only the art of communication but a process of self-discovery and self-expression. This small study provides a glimpse of how FH and SH are part of the identity of Indo-Fijians.

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Essay

Orthography development of Girmit Hindustani: The case of Fiji Hindi

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Abstract

Fiji Hindi (FH), a Girmit Hindustani (GH) developed and became widely used on the plantations in Fiji by the labourers (Girmityà) who were shipped from colonial India (1879-1916) during indenture (Girmit). Girmit is a period in history with which the descendants of the labourers around the diaspora identify. It stems from the word 'agreement' to represent the contracts that were signed prior to departure from Calcutta by their forefathers and mothers to a range of countries where cheap labour was needed by colonizers. Between 1834 and 1916 nearly 1.2 million Girmityà were taken to more than 17 countries (Lal, 2012). This meant that the languages and dialects the Girmityà spoke merged with local languages. By the time their children were born, their GH was informally standardised and was their first language. The proposal for a Universal GH orthography for all the languages formed during Girmit, has presented Fiji Hindi with the opportunity for standardisation and alignment to other GHs. The proposal developed by the Universal Girmit Hindustani Committee, made up of writers, linguists, ethnographers, and activists in the wider Girmit diaspora, sets out a draft orthography for potential adaptation to all Girmit Hindustanis. While the current links of Fiji Indians to their language and culture is irrefutable, any standardised orthography for literary purposes and documentation has never been adopted by the community.

This conceptual paper addresses the issues in adapting an orthography and a script for a pre-literate language like Fiji Hindi. The first consultation around the orthography was fortuitous, the orthography team received a grant from UNESCO New Zealand, to trial and discuss the proposed orthography with a group of Fiji Indians who have emigrated from Fiji and now live in Aotearoa/New Zealand. Although ideally, the first trial of the orthography should be in the country of origin of a language, receiving the UNESCO grant and having access to a group of Fiji Indian volunteers in Auckland gave the team a unique opportunity for its first trial. The preliminary trial of this script showed that the 'Universal Roman Code for Girmit Hindustani' can be adapted to FH with minimal changes, so long as the examples used are contextualised to the Fiji Indian context. This paper presents the suggested orthography for Fiji Hindi. More trials and consultations are needed with stakeholders and Fiji Indian communities in Fiji and in the diaspora to ascertain specific usage, enable revisions and allow adoption of the Fiji Hindi orthography.

Introduction

Not all languages have an orthography. The availability of a standard orthography encourages language documentation which empowers whole communities and sub-cultures to chart their history and to envision their future using their heritage language. Fishman (1991), who first brought global attention to the prevalence of multilingualism among a majority of the world's population, discusses the fate of pre-literate minority languages. He writes that a minority language used for literacy purposes will be maintained in communities where other languages compete for status, use in education and for formal use. Ferguson (1959) first identified the influence of the domains of use of a language, particularly for formal and informal use. He wrote that languages which extend their domains of use into non-traditional usage also consolidate their position as languages of vitality. Languages, especially sub-cultural languages have vitality when they continue to be used vigorously

for a range of purposes in formal and informal contexts in a community (Roche, 2017). Ferguson (1959) coined the term 'diglossia' to represent the presence of 'high' and 'low' versions of single dialects consistently being used for formal and informal purposes. Fishman (1991), extending the relevance to multilingualism, showed that language choice can also be dependent on purpose and context of use. The development and use of an orthography for previously unwritten languages bring heritage languages, like the Girmityà (GH) into hitherto unheard-of co-existence with standard and official languages and ensures a role for the language into the future. Because the Girmityà were mainly from Bhojpur in India (including Bihar, Uttar Pradesh, Jharkand and Awadh), the Girmityà are most influenced by Bhojpuri, Awadhi, and other Bihar dialects (Siegel, 1987; Shameem 2018). Each GH has different degrees of influence from the languages which make up the whole.

Girmityà Hindustani (GH) and its development

The fate of the N|uu language, which was once a viable, vital language of the San people (also known as Bushmen of the Kalahari) shows the danger of language shift and death of a preliterate language. With three remaining speakers and despite a newly developed orthography, N|uu is likely to die without specific and immediate support (Fihlani, 2017). This is not a fate that GHs wish to face, despite predictions of such an end (Barz & Siegel, 1988; Shameem, 1995; 2018). The dire predictions for the Girmityà Hindustani have led a group of Girmityà descendants across eight countries of the Girmityà diaspora to establish a Universal GH Committee (UGHC) and to draft a heritage GH orthography for adaptation and common use across the countries where Girmityà descendants have a presence and where their GH languages continue to have some vitality and use. The countries are Mauritius, South Africa, Suriname, Fiji, Trinidad, New Zealand, Australia, and the USA (Hassankhan et al., 2016; Personal communication, Farzana Gounder, UGHC Chair, 2022). In at least thirteen other Girmityà colonies Girmityà Hindustani is no longer spoken or has lost its ethnolinguistic vitality (Barz & Siegel, 1988; Lal, 2012; Shameem 1995).

To date, the orthography proposed to the UGHC by Baldewsingh and Marhè of Suriname has been trialled with Fiji Hindi (FH), Trinidad Bhojpuri and Sarnámi (Personal communication, Farzana Gounder, UGHC Chair, 2022). Motilall Marhè wrote the first Sarnámi Grammar book in 1985 and since 1978 has been encouraging the use of Sarnámi orthography in the publication 'Aisa Samachar' at the Surinamese Foundation in the Hague. He has been instrumental in consistently promoting the use of Sarnámi in all possible situations. Baldewsingh continues to fly the flag for protection and promotion of Sarnámi in a widening range of domains. He is a writer, poet and politician of the Dutch Labour Party and based at the Hague where he promotes Sarnámi through a regular publication on the website 'Writers Unlimited'. Neither Marhè nor Baldewsingh believe that Sarnámi can be assured longevity and continued use in the community without specific interventions (Marhè, 2020).

Each country will trial, adapt and promote their own GH with feedback and suggestions to be incorporated into the Universal GH Code.

Background

Of all the GHs, Sarnámi has a well-developed orthography (Mesthrie, 1992; Hassankhan, 2016; Marhè, 2020). Since 1986 it has official status in Surinam's constitution, is taught in schools, and reading and listening materials are widely available, often through translanguaging efforts in Surinam and through the Surinam Desk at the Hague in the Netherlands. Sarnámi has been the first GH to publish a grammar book and develop, use and promote an orthography (Marhè, 1985). It makes sense that this resource, which has stood the test of time and policy changes in Surinam is fully utilised in developing a GH orthography, which would become a common resource for others to use. However, each GH has developed separately from each other, their languages of origin have been termed Bazaar Hindustani, Plantation Hindustani, Plantation Pidgin Hindi, and Overseas Hindi. All refer to the links between the GH and the original languages spoken by the Girmityà when they left India. Each also retains unique features and lexical items which are linked to their origins and development.

Given the danger to GHs through further migration of the Girmityà descendants, after indenture and in recent years, the threat from other standardised languages in the community and the often-low status accorded in religious and formal contexts to them, the development of a GH orthography is well overdue. In 1987, Barz and Siegel (1988) published a collection of essays on the imminent language shift and death of the GHs without specific protection. Subsequent writers in the diaspora have also pointed out the importance of scripting and teaching GHs, even while usage is shrinking (Siegel, 1987; Mesthrie 1992; Shameem, 2018; Subramani, 2000). While a small number of pre-literate GH languages have enjoyed some support and revival, the lack of a standardised orthography has hampered efforts to document, promote and extend domains of language use in the communities of practice. Use of the GHs in jokes, music, creative writing, media, and limited use during informal social gatherings particularly among community elders, has helped the languages to survive in some contexts (Hassankhan et al., 2016; Marhé, 2020; Shameem, 2018).

The positive side to using the GH orthography suggested by the UGHC is that it does not preclude the use of other scripts or other versions of the script as unusable or substandard. As suggested by the UGHC, the selection of script and choice of orthography remains firmly within the sphere of each Girmit Hindustani. Several attempts have been made in the Girmit diaspora to promote an orthography for specific Girmit Hindustanis with varying and usually little, degrees of success, except for Sarnámi.

Significance of project

Jnan Adhin, Motilal Marhé, Theo Damsteegt, and Jit Narain of Suriname have played overt and significant roles in the promotion of a Roman code for Sarnámi phonology and grammar since 1978. They have brought wider acceptance of the language for mainstream use and recognition in Surinam and at the Hague where many of the language initiatives were based – Suriname having been a Dutch colony (Hassankhan et al., 2016; Marhé, 1985; 2020). In Fiji, linguists, Raymond Pillai (1975) and Jeff Siegel (1987), proposed Roman scripts for FH, and Rajend Mesthrie for Bhojpuri Hindi in South Africa (Mesthrie, 1992). Pillai, Chandra, Shameem and Subramani have crafted FH literature using both the Devanagari and Roman scripts (Chandra 2018; Pillai, 1990; Shameem, 2018, 2019; Subramani, 2001, 2019). While scripts have been developed or adapted at will by various writers there has been no real attempt or will to adopt a ‘standard’ across the GH diaspora – meaning the continued use of disparate and inconsistent orthographies and scripts even within the use of Devanagari or Roman script.

Thus, adapting a “one size fits all” approach is neither desirable nor possible, given the wide contexts in which each GH has developed and the languages each has come into contact with, on the plantations, and subsequently (Barz & Siegel, 1988; Mesthrie, 1992). In fact, those Girmityà descendants who have migrated in recent years feel their origins keenly and wish to have an identity which is unique to their Girmit inheritance (Gounder, 2003; Shameem, 1995). Fiji has a diversity of cultural and ethnic groups in the country contributing to the current version of Fiji Hindi - giving the language its context and relevance. Community participation and consensus in any proposed orthography enables ownership.

Literature on orthography development for preliterate languages

Several languages have undergone a period of revitalisation driven by the development of an orthography. Alongside orthography issues, script choice has also been contended. This review of literature presents the rationale behind script and orthography choice and underpins the theory behind the first consultations around a potential FH orthography. Globally, the process of development of an orthography for previously unwritten languages has much to contribute to the development and possible adoption of a FH orthography.

Issues of script choice in orthography development

The most common script used in orthography development internationally has been the Roman (also known as Latin), although this choice has attracted both positive and negative attention. It has been especially popular for pre-literate languages and has been, for example, the most widely used among 1500 of the 2000 preliterate languages scripted in Africa (Bendor-Samuel, 1996; Mumin, 2017). Lewis and Simons (2016) write about the process of orthography development in Mongolia where the Roman script was preferred over old, rarely used scripts for Mongolian because of its perceived 'neutral' stance and graphic simplicity compared to the Mongolian scripts. Similarly, in eight states of Northeast India, Pappuswamy (2017) found a preference for the Roman over the Assamese script for its accessibility and transparency. The 420 listed minority pre-literate Assamese languages make script and orthographic decisions difficult, because of the large number of languages and the political sensibilities around script choice.

The success of orthography development depends on its purpose (electronic communication, creative writing, informational writing, poster creation as well as awareness-raising of social conditions). An orthography will only be used if there is a purpose for it, as inevitably language selection for writing is influenced by the majority language in use and the orthography already in place. The key to a universally acceptable orthography may well be to have a language 'standard', which all speakers have a connection to, especially when several dialects are involved (Webb, 2010). Cahill (2014) outlines two ways to 'standardise' orthographic efforts. The *unilectal* approach selects one of the dialects of the language as the standard, whereas the *multilectal* approach takes features from several existing dialects to create a 'standard' (Cahill, 2014, pp. 12-13). Ernst-Kurdi (2017) of SIL International gives the example of the *Mada* language spoken in Far North Cameroon, which has undergone four separate trials in attempts to standardise an orthography since the 1970's. He points out that what people want from their orthography and how they want their language to be graphemically represented is a critical factor in its acceptance by the community.

Script choice for Girit Hindustani

The Universal Girit Hindustani Committee proposes that any GH orthography must be accessible to their communities of practice. In Fiji, as in the wider Girit diaspora, competence in the Roman script far outweighs competence in Devanagari (Mugler & Tent, 1998; Shameem, 1995; 2002a). This is evidenced by anecdotal evidence from writers who want to use the medium of FH to write but feel restricted when asked to use Devanagari for creative expression. Shameem, for instance, expressed an inability to write FH using Devanagari script for the book *Koi Kisse Bataao*, and relied on back 'translation' of the Devanagari script to ensure the meaning in her poetry was not lost on publication (Chandra, 2018; Personal communication, Nikhat Shameem, 2022).

Readers have also spoken of the frustration of being unable to read messages and information when presented in Devanagari. A call for auditions for Pillai's (1990) FH play *Adhura Sapna* in the early 90's in Wellington, NZ showed the inability of the Fiji volunteer actors (Indian and iTaukei) to read his stage directions in Devanagari, even while they struggled with reading the rest of the play in Roman scripted Fiji Hindi (Shameem, 1995). Research evidence also shows declining popularity of Standard Hindi in Fiji primary schools (Shameem, 2002a, 2004). This is probably because Standard Hindi is taught as a 'subject' while English is the main language of schooling and is the preferred language for inter-ethnic communication in the diverse Fiji communities (Mugler & Tent, 1998). Yet among Fiji Indians, Standard Hindi maintains a higher status than any of the GHs because of its links with the historicity of the Devanagari script and its 'H' status over the Girit Hindustanis. According to Ferguson's definition of diglossia, and subsequent research in this area, a dialect may have 'H' (high) or 'L' (low) status and this determines its contexts of use (Ferguson, 1959; Sayahi, 2014; Sneddon, 2003).

Fishman (1991) points out that the same differentiation can apply to unrelated known languages in multilingual societies, with one or more having higher status than others. Perception of 'status' issues among languages has attracted the 'orthographic shaming' in the media of those choosing the Roman

script over the Devanagari in the development of Girit Hindustani (Delaibatiki, 2021; Kumar, 2021; Meletis, 2018). Negative attitudes to the use of Roman script for FH has also attracted public and political attention in Fiji, especially through the media (Delaibatiki, 2021; Kumar, 2021; Mangubhai & Mugler, 2006; RNZ, 2020; Shameem, 2018). When Radio Mirchi changed its broadcast language to Fiji Hindi from Standard Hindi, the negative fallout from all communities (not just the Fiji Indian) and complaints to the Government, forced the CEO of the Fiji Broadcasting Corporation to justify the change through debates and interviews with academics and linguists, aired on Radio Mirchi (January 15th-20th 2020). Attitudinal surveys have also shown consistent attitudes of Fiji Indians towards FH as having a lower status than the other languages in the Fiji Indian speech repertoire in Fiji and in NZ (Shainaaz, 2022; Shameem, 1995; 2004). Attitudes to orthographic and script choice mirror the complex and linguistic function of orthographies and their status in the community.

Despite support for the adoption of the Devanagari script over the Roman among some Girmityà descendants, Devanagari (used for Standard Hindi), is scantily known for literacy purposes except by those who choose to take it as a subject of study at school or through private tuition in the Girit countries (Barz & Siegel 1988; Mangubhai & Mugler, 2006; Mesthrie, 1992; Mugler & Tent, 1998). Devanagari also has inconsistencies which make it opaque (Pandey, 2007). Sproat (2000), in examining the nature of the phonology-orthography interface in Hindi, shows its inconsistency at phonological levels and proposes reform (Sproat, 2000). Political and religious sensibilities around script reform hinder development and change (Delaibatiki, 2021; Kumar, 2021; Shameem, 2004). These mean a heavier scripting burden for users of GH who may find it difficult to grapple with appropriate choices of grapheme and phonological representation in Devanagari finding it opaquer than the Roman (Pandey, 2007; Sproat, 2000).

The choice of the Roman script for GH arose out of the knowledge that those in the Girit diaspora are more literate in the use of the Roman script over Devanagari or Persian (Shameem, 1995, 2002). This enables access to and universal application across the GHs. Moreover, Sarnámi has been used as the benchmark for the preliminary development of a GH orthography as it is the only GH to date with a standardised, developed and used orthography in the Roman script (Marhé, 2020). Orthographers working with preliterate languages advise caution against a top-down approach of imposing an orthography on a community (Donaldson, 2018; Meletis, 2018). Consultation, discussion, participation, partnerships and *talanoa*⁶ sessions are key to a workable script for the community which uses it as their preferred language of intra-ethnic communication (Mangubhai & Mugler, 2006; Mugler & Tent, 1998; Siegel, 1987).

Girit descendants speak languages which have had similar origins (see for instance, Barz & Siegel, 1988; Mesthrie, 1992; Siegel, 1987). Variation amongst them is most visible in words that are marked by context, especially local food items, words for greetings and thanks and unique contextual humour in skits, music, song and dance. Borrowing and adaptation are commonplace, and words like *'dalo'* and *kantàp* (cane top) are well integrated (Shameem, 2005). The transparent Universal GH Code, therefore, is easily adaptable by all the GHs (Personal communication, Farzana Gounder, UGHC Chair, 2021).

GH orthographic efforts started by taking a unilectal approach with Sarnámi providing the underlying rationale for the proposed orthography (Baldewsingh & Marhé, 2020; Cahill, 2014). When the original standard incorporates features from the context and specific use of each GH, the approach becomes multilectal. This means the universal orthography is flexible enough to incorporate differences and useful enough to be mutually intelligible with all the other varieties spoken in the Girit diaspora. Since Sarnámi and FH trace their roots mainly to Awadhi and Mauritius and Trinidad to Bhojpuri, any

⁶ Talanoa is a Pacific based research strategy where the rules of consensus, debate and discussion are rooted in the cultural roots of the Pacific (Nabobo-Baba, 2006).

distinctions and variations would need to be carefully addressed and incorporated into the universal GH orthography.

One of the most complex issues in orthography development is when multiple scripts (writing systems) or orthographies (grammar, lexis, syntax) are used for one language. The GHs, lacking an orthography, have been scripted using Devanagari or Roman script with the orthographic peculiarities of each. The issue is not limited to GH's and can be found in other languages, for instance, the West African trade language of Manding which is written in at least three distinct scripts: Arabic, N'ko (ߞߟߣߊ߫) and Roman (Donaldson, 2018). This has strengthened the use of Manding in a larger number of domains, depending on context and need. Similarly, since the GHs are a collection of multiple dialects and languages, it would be prudent not to insist on any one orthography and allow community members to ultimately make their own choice.

Political and historical sensibilities have a way of shaping orthographic choices and the roles of other dialects, or related languages even if they are from the same root (Donaldson, 2018; Ernst-Kurdi, 2017; Georgiou, 2011). For GH, while the root is in India, pre and during indenture, divergence came with context and language contact. Language choice is determined by personal, formal, religious, and cultural events. In Suriname, the development and use of Sarnámi and its official status since 1986 has enabled its support towards the orthographic development of other GHs (Barz & Siegel, 1988; Hassankhan, et al., 2016). No other GH has reached this milestone.

In using the GHs as part of their "grassroot literacies" (Blommaert, 2008), Girmityá descendants, have used whatever script and orthography they had at their disposal to write in their language. Developing a writing system for universal use in the Gimit diaspora allows mutually intelligible documentation of Gimit history and language evolution but also provides enduring links between the descendants of the Girmityá, adding to the chance of maintenance and promotion of all GHs. The formation of the UGHC and the proposal of a possible 'universal' script is evidence of this current process. Moreover, the use of English as a global lingua franca means that transnationalism and globalisation have influenced our language choices with spelling and grammar, making the choice of the Roman script an obvious one for the development of a GH orthography while not disregarding the possible choice of either script.

The Universal Code standardises the script and spelling conventions of all GHs and makes their written forms accessible to all who understand and use GHs. It enables young language learners and those who wish to maintain and promote their mother tongue to do so in a pragmatic and systematic way, knowing that the product will support the use of their language into the next generation. It embraces the common heritage of Girmityá, across the Gimit diaspora. For creative artists, it creates a 'universal' audience in the Gimit diaspora with affinity to the heritage language. It also contributes to the identity and resilience of the community and fosters pride in the language

The use of a Universal Code built on the shared Gimit heritage will improve cultural and linguistic links across the Gimit diaspora. As showcased through the International Conference on Forced Labour and Migration (2019), there are significant cultural similarities between the countries where the GHs are used. The Universal Roman Code will enable participation of a wider reading audience across the diaspora especially among younger people, whose role in language maintenance, promotion and continued development is critical for survival of these languages. While the standard languages tend to use opaque orthographies which are difficult for diasporic Indians to master, a transparent shallow orthography for the GHs will make writing and scripting easier for members of Gimit communities globally.

Using the suggestions of Baldewsingh and Marhe (2020) GH has adopted a transparent orthography for further development, which mirrors use across the languages of the Gimit era regardless of any religious or sectoral affiliation. This is a unique opportunity to learn from other GH language

communities which have made the same attempt, with varying degrees of success but ongoing commitment.

Working on an orthography for Fiji Hindi

Globally, successful orthography development workshops have followed roughly similar approaches, choosing to work within speech communities to develop and use transparent orthographies which best represent their speech. The number of consultations and workshops for optimum acceptance depends on the transparency of the suggested script, community attitudes to the language itself, and willingness of various sectors of the community to work on a script (Seifart, 2006; Smalley, 1965).

The ease of transcribing in direct reflection of the spoken language was the principal factor behind the choice of the Roman script for the Mongolian, Sasak and Berawan languages, for instance. In all three situations, the linguists working on the projects write that the transparency of the Roman script enabled quicker reading and writing processing among workshop participants as well as stakeholders (Burkhardt et al., 2020; Janhunen, 2014; Lewis & Simon 2016;). Both Sasak and Berawan are pre-literate Indonesian languages which have multilects. Like the proposed GH orthography, the common system is in place for reference and use with any unique difference arising from context or need. Despite the presence of five dialects of Sasak, and four of Berawan and some complex linguistic differences between each one, each language now has the advantage of offering a unified orthography for all dialect groups in each, to adapt and use (Burkhardt, et al.; 2020Seifart, 2006).

Despite widespread popularity of the adoption of Roman script for pre-literate languages, it is still a political and attitudinal choice and depends on community acceptance. Hasselbring, (2005), Janhunen (2014), Mumin (2017) and Pappuswamy (2017), for instance write of the difficulties inherent in this process of consultation, selection, and choices in African nations and in both Mongolia and Assam. In most cases, the Roman script is ascribed a neutral status and is therefore more acceptable to communities of use, which may perceive other scripts as having political or cultural baggage (Gal, 2018). This is not always the case however, as the choice of multiple scripts for Manding in West Africa has been widely accepted by this cross-border language group (Donaldson, 2018).

The constant and consistent use of a language would be helpful for its orthography development as it is already perceived by the community as carrying vitality. Furthering language vitality comes with the ability to make language and script choices in a multitude of contexts and so flexibility and choice should remain with the speakers of each GH as consultations and trials are held in the Girit diaspora. These consultations are essential for adoption of any selected orthography and for these GH languages to survive as viable languages of use, communication, and documentation into the future.

A proposal for the Universal GH Code from the ‘Dutch thinktank’

Girit Hindustanis have been around since 1834. Lal (2012) charts the numbers who left India for various colonies under Indenture in the Girit diaspora. Standardising the GHs has been a long running issue in the Girit diaspora ever since Girit was abolished and churches took over the education of diasporic Indians. Although each GH developed separately, the fact that the base languages were similar meant that certain common usage and vocabulary from the original languages and dialects were retained, with Bhojpuri and Awadhi being the dominant dialects. Time and space have seen each GH develop separately, with unique contextual differences, including place names, spellings of personal names and food items (Shameem, 2005). The similarities, however, are too many to ignore and GH descendants have shown a universal desire to amalgamate, adapt and adjust an orthography for their own use in their own contexts.

In developing a workable orthography for GH, the Universal GH Committee took the proposed initiative of the Suriname linguists and ethnographers and shared it with wider members of the Girit diaspora who had a similar interest in seeing their own GH orthography develop, to take their language beyond the preliterate stage. The adoption of a universal Roman orthography for GH has significant linguistic and cultural advantages. Since the most developed orthography has emerged from

Suriname since 1986, the proposal from linguists Rabin S. Baldewsingh and Motilal Marhé of the Netherlands, was adopted as the base 'standard' for further trials. This followed two roundtable consultations at the International Conferences of Forced Labour and Migration in the last half-decade (Personal Communication, Baldewsingh, 2020).

Based on their experiences with writing the Sarnámi variation of GH and the 1986 Sarnámi orthography, they acknowledge phonological differences between majority English and Dutch speaking countries but believe that with small adjustments, the proposal could be universally applicable. They suggest that the use of the Roman over Devanagari or Urdu script is a choice for individual GHs to make. In developing a 'transparent' orthography they took three principles into account: the phonological principle (each phoneme is presented in a certain grapheme), the economic principle (a grapheme is represented by a single letter) and the practical principle (limited use of diacritical signs on or under a letter). They also propose bringing concordance to the orthography by using the same letters for similar sounds in all GH's. Nasal sounds are indicated by the nasal 'n', which is underlined. Retroflex sounds are indicated by placing a line under the letters rather than a dot, which would require the symbol to be inserted via a computer. The economic principle meant that the diacritic sign was not used on the long 'i' and 'u', because very few words using these sounds exist in the GHs. Appropriate phonemes are used for this purpose. Loanwords, if appropriate, are written in the language of origin, if use and sound have remained unchanged.

Another challenge is that the Roman alphabet comprises 26 letters while GH (as in the case of Sarnámi) consists of more than 40 phonemes. This means dealing with diagraphs and diacritic signs. Other aspects to consider, such as morphology to further establish uniformity, etymology, and aesthetics, are to be discussed in the UGHC after the consultations. Baldewsingh and Marhé (2020) suggest some compromise when all the GHs have had a chance to trial the orthography. Above all, Baldewsingh and Marhé (2020) recommend consistency in the choices made by the GHs and for those choices to be used in practice. They suggest that without consistency underpinning the process, the orthography would be harder to develop, share and use (Personal communication, Baldewsingh, 2020).

Figure 1 Proposed International Girmityá Hindustani orthography contextualised for Fiji Hindi

Vowels (Swar)	Sound	GH examples	FH examples
a (short)	sounds like 'u' in but	as in <i>ba</i> l (power)	as in <i>fa</i> l, <i>dhan</i> (fruit, wealth)
á (long)	sounds like 'a' in bark	as in <i>dám</i> (price)	as in <i>dám</i> , <i>bár</i> (price, hair)
i (short)	sounds like 'y' in economy	as in <i>díl</i> (heart)	as in <i>díl</i> , <i>míl</i> (heart, meet)
i (long)	sounds like 'ea' in peace	as in <i>tín</i> (three)	as in <i>tín</i> , <i>bis</i> (three, twenty)
u (short)	sounds like 'u' in bull	as in <i>ku</i> l (family)	as in <i>pu</i> l, <i>du</i> i (bridge, two)
u (long)	sounds like 'oo' in cool	as in <i>du</i> r (far)	as in <i>du</i> r, <i>fu</i> l (far, flower)
e (long)	sounds like 'e' in pen	as in <i>te</i> l (oil)	as in <i>te</i> l, <i>khel</i> (oil, play)
ai	sounds like 'a' in basin	as in <i>aí</i> san (such, like this)	as in <i>aí</i> san, <i>bhaini</i> (like this, sister)
o	sounds like 'or' in horse	as in <i>os</i> (dew)	as in <i>os</i> , <i>pos</i> (dew, post)
au	sounds like 'oa' in moan	as in <i>kaun</i> (which)	as in <i>kaun</i> , <i>faun</i> (which/who, phone)

Nasal (anunásik)	Sound	GH examples	FH examples
<u>n</u>	<i>no sound in English</i>	as in <i>me<u>n</u></i> (in)	as in <i>me<u>n</u></i> , <i>dhe<u>n</u></i> <i>dhe<u>n</u></i> (in, crying for no reason)
ng	sounds like 'ng' in gang	as in <i>ra<u>ng</u></i> (colour)	as in <i>ra<u>ng</u></i> , <i>sange</i> (colour, together)
nk	sounds like 'nk' in banker	as in <i>a<u>n</u>khí</i> , <i>pa<u>n</u>khá</i> (eye, fan)	as in <i>a<u>n</u>khí</i> , <i>pa<u>n</u>khá</i> (eye, fan)

Vowel combinations (diagraphs)	Sound	GH examples	FH examples
ái	sounds like 'hy' in why	as in <i>gái</i> (cow)	as in <i>gái</i> , <i>pái</i> (cow, find)
áu	sounds like 'ou' in house	as in <i>náu</i> (barber)	as in <i>náu</i> , <i>láu</i> (barber, bring)
oi	sounds like 'oi' in coin	as in <i>oí</i> san (such)	as in <i>woí</i> san, <i>dhoi</i> (such, wash)
ui	sounds like 'ui' in quit	as in <i>sui</i> (needle)	as in <i>sui</i> , <i>dui</i> (needle, two)
ew	<i>no sound in English</i>	as in <i>newtá</i> (invitation)	as in <i>newtá</i> , <i>dewtá</i> (invitation, god)
iw	sounds like 'ew' in few	as in <i>jíw</i> (life)	as in <i>jíw</i> , (life)

áe	sounds like 'l' in l	as in <i>jáe</i> (go)	as in <i>jáe, páe</i> (go, find)
áo	<i>no sound in English</i>	as in <i>jáo</i> (go!)	as in <i>jáo, láo</i> (go!, bring)
ei	sounds like 'a' in face	as in <i>deis</i> (has eaten)	as in <i>áigeis, peisa</i> (has come, money)
eo	<i>no sound in English</i>	as in <i>leo</i> (oh dear, take)	as in <i>leo, deo</i> (take, give)

Consonants (wyanjan)	Sound	GH examples	FH examples
b	sounds like the 'b' in boat	as in <i>bandar</i> (ape)	as in <i>bandar, besaram</i> (ape, shameless)
bh	<i>no sound in English</i>	as in <i>bharal</i> (full)	as in <i>bhara, bhaini</i> (full, sister)
ch	sounds like the 'ch' ch ariot	as in <i>chau</i> (six)	as in <i>che, chil</i> (six, peel)
d	<i>no sound in English</i>	as in <i>din</i> (day)	as in <i>din, dil</i> (day, heart)
<u>d</u>	sounds like the 'd' in donkey	as in <i>dorá</i> (thread)	as in <i>dorá, dabbá</i> (thread, container)
<u>dh</u>	<i>no sound in English</i>	as in <i>dher</i> (much, many)	as in <i>dher, dhen dhen</i> (many, whining & crying)
dh	<i>no sound in English</i>	as in <i>dhire</i> (slow)	as in <i>dhire</i> (slow)
f	sounds like the 'f' in father	as in <i>fáidá</i> (advantage)	as in <i>fáidá, fillam</i> (advantage, film)
g	sounds like the 'g' in gate	as in <i>gos</i> (meat)	as in <i>gos, gádin</i> (meat, garden)
gh	<i>no sound in English</i>	as in <i>ghar</i> (house)	as in <i>ghar, ghám</i> (house, sunshine)
h	sounds like the 'h' in hot	as in <i>ham</i> (I, me)	as in <i>ham, hamár</i> (I, me, mine)
j	sounds like the 'j' in jam	as in <i>jiwan</i> (life)	as in <i>jiwan, jab, jannat</i> (life, when, heaven)
jh	<i>no sound in English</i>	as in <i>jháru</i> (broom)	as in <i>jháru, jhingá</i> (broom, prawn)
k	sounds like the 'k' in bake	as in <i>kakahi</i> (comb)	as in <i>kakai, kantáp</i> (comb, cane-top)
kh	<i>no sound in English</i>	as in <i>khel</i> (play)	as in <i>khel, khasi</i> (play, goat)
l	sounds like the 'l' in lot	as in <i>lál</i> (red)	as in <i>lál, bál</i> (red, hair)
m	sounds like the 'm' in mouth	as in <i>munh</i> (mouth)	as in <i>munh, mast he</i> (mouth, contented)
n	sounds like the 'n' in name	as in <i>nám</i> (name)	as in <i>nám, namaste</i> (name, namaste)
n(g)	sounds like the 'ng' in gang	as in <i>rang</i> (colour)	as in <i>rang, sanghe</i> (colour, together)
n(k)	sounds like the 'nk' in sunk	as in <i>pankhá</i> (fan)	as in <i>pankhá, sanki</i> (fan, wink)
n(h)	<i>no sound in English</i>	as in <i>munh</i> (mouth)	as in <i>munh, unh</i> (mouth, that one)

p	sounds like the 'p' in r espect	as in páp (sin)	as in páp, pet (sin, stomach)
ph	<i>no sound in English</i>	as in phul (flower)	as in phul, phitá (flower, lace)
q	<i>no sound in English</i>	not a letter in GB* or FH**	
r	sounds like 'r' in rat	as in rát (night)	as in rát, barsát (night, rain)
ṛ	<i>no sound in English</i>	as in peṛ (tree)	as in peṛ, paṛ lo (tree, study)
ṛh	<i>no sound in English</i>	as in paṛhe (to read)	as in paṛhe, sarhe (reading, rotting)
s	sounds like the 's' in s ong	as in sál (year)	as in sál, sel (year, sale)
sh	sounds like the 'sh' in s hift	as in shánti (peace)	as in shanti, sharam (peace, shame)
t	<i>no sound in English</i>	as in tor (yours)	as in tumár ,tájá (yours, fresh)
ṭ	<i>no sound in English</i>	as in taṭká (fresh)	as in kanṭáp, khaṭái (cane top, dried mango)
th	<i>no sound in English</i>	as in thaili (bag)	as in thaili, thak giyá (bag, tired)
ṭh	<i>no sound in English</i>	as in ṭhik (good)	as in ṭhik, ṭhoko (good, hammer)
v	sounds like the 'v' in v ictory	as in Vishnu (God Vishnu)	as in Vishnu, (God Vishnu)
w	sounds like the 'w' in w ater	as in wajá (reason)	as in wajá, weilei (reason, oilei)
x	<i>no sound in English</i>	not a letter in GB* or FH**	
y	sounds like the 'y' in y ear	as in yár (friend)	as in yár, pyás (friend, thirsty)
z	sounds like the 'z' in Z anzibar	as in zamindár (landowner)	no sound in FH 'j' is used instead (jamindár)

* Girmīṭiyá Bhojpuri

**Fiji Hindi

Adapted from (Siegel, 1987) and (Baldewsingh & Marhé, 2020)

Preliminary trial of orthography for FH speaking community in Auckland, New Zealand

Fiji Hindi writers and authors have used both the Devanagari and Roman scripts to script FH and have largely devised their own systems for scripting either one (Chandra, 2018; Pillai, 1990; Shameem, 2018, 2019; Subramani, 2001, 2019). New and potential writers are uncertain about choice of script and orthography to ensure wider readership. In Fiji, competence in reading and writing Devanagari script is limited to those who studied Standard Hindi in primary school. It excludes those who attended schools where Hindi was not taught, or Urdu was taught instead (Mugler & Tent; 1998; Shameem, 2004). This means that writing FH using Devanagari would potentially exclude those who are not competent in this script while most Fiji Indians would be competent in the Roman. These are critical considerations as without widespread intelligibility it is unlikely that any orthography will be adopted and established for regular use in the community.

The codification of GHs provides a substantial platform for efforts to preserve GH across the Girit diaspora where it still has a presence (Fiji, Suriname, Trinidad, South Africa, Mauritius). In some countries, GH has lost ethnolinguistic vitality and is used in limited domains. In these countries, the focus is on language revitalisation. Fortunately, in Fiji, FH is well-maintained as the first language of the Fiji Indian community. Evidence among the Fiji Indians in New Zealand, however, shows patterns of language shift from the use of FH to English in the home domain among young first generation (Generation 1b) and 2nd generation Fiji Indian migrants (Shameem, 1995). To reverse the process of language shift is difficult, however it is easier to put policies in place to halt it and allow further development. Chamorro and Maori are examples of this process, with limited degrees of success (King, 2001; Taimanglo, 2010).

The continued existence and vitality of FH needs specific interventions. Acknowledging FH as an official language in Fiji⁷ is a first step. This will offer it protection and legitimise its use in an ever-extending number of domains. It will also have status ramifications among all speakers, regardless of whether they live in Fiji or form part of the diaspora who have emigrated. Moreover, the utilisation of a Roman script for its orthography will help in extending the domains of FH use. Suriname already leads the charge for this process; Sarnámi has been one of the national languages of Suriname since 1986 and has an orthography which was developed after extensive community consultations and advocacy by local writers and linguists as well as lobbying by the speech community for its inclusion as a national and official language of Suriname (Hassankhan et al., 2016; Marhé, 2020). Fiji, Suriname, and Mauritius are the remaining three countries where GH, is spoken by significant numbers of Giritiyá descendants (Barz & Siegel, 1988; Hassankhan et al., 2016).

To develop and promote an orthography for the Pacific variety of GH, Fiji Hindi, means incorporating features (especially lexical items) from the other languages in the Fiji Indian speech repertoire including Standard Hindi, Urdu, English and i-Taukei languages. With all its perceived quirks and peculiarities, FH is an integral part of the self-identity of the Fiji Indians – their identity as Pacific Islanders as well as their identity as Indians (Dean, 2003). Religious identity also influences attitudes to script choice; Muslims may relate to the Arabic/Persian script and Hindus the Devanagari. Hindi and Urdu are often accepted as the same spoken language with some variations, and religious affiliations are used to determine language loyalty. Standard Hindi and Urdu have distinct orthographies which are not mutually intelligible. While these loyalties remain, these would not be viable scripts for use with FH, they are opaque and competence in the community is very limited. Fiji Indians have their strongest collective writing competence in using Roman script.

The draft GH orthography shared with the facilitators of the FH orthography project was subsequently mapped with FH for similarities, divergences, and FH contextual examples (see Figure 1). The orthography at this stage was for use in a range of realistic language functions, showing whether it was capable of documenting regular speech. By not prescribing the orthography initially but allowing later adjustments, it was hoped that participants would become comfortable with using Roman script to represent their speech. When presented with a working draft orthography, the content remained important. This approach, centers on the community rather than the language and allows documentation of free expression first. It also supports the development of a transparent orthography that is easy to read and write because words in the language are phonologically represented as if they were spoken (Baroni, 2011). This approach is also known

⁷ FH had official language status along with English and i-Taukei languages in the 1997 Constitution of Fiji. The designation was removed in the 2013 Constitution.

as the “orthographic depth hypothesis”, which posits that the closer an orthography is to its phonemic representation, the easier it is to read (Klima, 1972).

In order to adapt and apply the Universal GH alphabet and sound chart to FH, the proposed orthography was matched to sounds and features in FH and for authenticity and applicability of the examples to the Fiji context and to FH (see Figure 1). While much of the GH orthography and examples resonated with the FH team; others were not as familiar. Some examples had to be specifically contextualised to FH such as the sound /z/ which exists in Sarnámi and other GHs but is replaced with the sound /j/ in FH. So ‘zamindár’ in GH, is ‘jamindár’ in FH, a rarely used word and concept in Fiji as Fiji Indians are not traditional landowners. This was therefore not an appropriate example to use. These sound changes are not uncommon between the GH’s. The use of allophones such as /s/ for /sh/ also varies between the GH’s and these differences would need accommodation within each script choice, ensuring flexibility and appropriate use. Choice of one allophone over another will remain with the user.

A FH orthography therefore would need to include pertinent variations of use, which are best dealt with by providing examples, appropriate to the context. Trials are a critical aspect of orthography development. Given the issues around establishing a ‘standard’ in orthography development, any proposed orthography must be applicable, relevant, and appropriate to FH, rather than only aspiring to one standard. Rigid adoption of one language standard denies the presence of linguistic diversity and leads to demotion and devaluation of those minority languages which do not aspire to this standard (Mühlhäusler, 1996). Superimposing one language standard on all represents a ‘reduction’ of the language, defeats the purpose of applicability, and can become a threat to its survival (Coulmas & Guerani, 2012, pp. 454-455; Gal, 2018). Taking the above approach and using the GH draft orthography from the UGHC with appropriate changes for FH, the orthographic team took the opportunity to run the first consultations and trials for a FH orthography.

Adaptation of the proposed orthography by an initial small and representative community group has paved the way for leaders in the community to support, adapt and promote the orthography and will enable broader acceptance and use by the wider community (Cahill 2014; Fasold, 1984; Gal, 2018). It has also provided legitimacy for further consultations and script trials. The lessons learned from the initial trial of a FH orthography will be invaluable in future trials of this and other GH orthographies. In Fiji – the country of origin of Fiji Hindi and the country which the bulk of the Fiji Indian population continues to call ‘home’, the proposed orthography will support the revival and use of FH in a wider range of domains.

Process of first trial

For the preliminary trial in the Auckland Fiji Indian community, a multilectal approach (Cahill, 2014), was adopted. This meant that the workshop participants played an active and consultative role in the process, and this has paved the way for the adjusted FH orthography to be trialled further in Fiji and the wider FH speaking diaspora before final submissions to the UGHC. The first trial was held in Auckland, New Zealand. This first trial has also served as the precursor for subsequent trials, by allowing the orthographic team to identify limitations, and strengths. A successful application for funds from UNESCO New Zealand (NZ) supported the FH orthography team to have a consultative workshop around the use of FH for informal and constructed communication on themes of concern to the NZ Fiji Indian community.

The aims as stated in the UNESCO application for support funds were:

1. To develop a cross-disciplinary project that provides a venue for youth to express themselves in their heritage language, FH, with the central focus being language as ‘empowerment’.
2. To support use of a FH orthography as a platform for intergenerational connectivity between older and younger community members.

The stated aims were broad enough to be extended to subsequent trials – in NZ, Fiji, and the Fiji Indian diaspora. Twenty volunteers from the NZ Fiji Indian community gathered at Whanau Hall in Auckland where the purpose of the trial and the rationale underlying the proposed orthography were discussed and validated. Samples of the use of the orthography were shared – with a voice overlay of the script, allowing participants the opportunity to become familiar with transparent script use and associated sound. Participants were then split into groups. Each group minimally had an older and younger FH speaker. Picture cues stimulated conversation. This generally centered around the older speaker sharing stories/narratives about their arrival in New Zealand, or the team describing an event, or comparing two soccer teams in

Fiji and New Zealand or describing two local Sunday markets. They could pick their own tasks. They used FH for this purpose.

Selected rapporteurs wrote what they heard during the session, using whatever medium they preferred. One rapporteur liberally illustrated their session with sketches, another with diagrams. There was very little discussion around the nature or form of the orthography or how closely the rapporteurs should follow it. While the draft FH orthography was shared with them, they were not bound to its use. Most importantly it was a communicative exercise legitimising the use of a writing script to document the FH narratives. Rapporteurs of the groups followed the suggested orthography to various degrees; however, all participants were positive about the prospect of a formalised, standardised orthography for FH. The group felt that this was a first step towards charting their own orthography regardless of initial concerns around getting the script and orthography 'right'. Participants asked to take the scripts home and re-do them more carefully (Personal communication, Jennifer Janif, 2021). At the end of the day, participants had a reflective session on the outcomes, their feelings about the day, their production of the outcomes and the future of any orthographic effort.

Page (2013) discusses the orthographic efforts of the Muak S-aak and Meung Yum, languages in the Myanmar-China border area where the explanation of key orthography principles, the demonstration of orthography use in the language and the use of letter tiles proved to be helpful. These suggestions were adopted for the FH workshop in Auckland and meant that participants made informed choices while developing their stories and dialogue in an orthographic form which represented their speech. This facilitated the participatory nature of the process without overburdening the participants with the actual script development process which needed linguist know-how and input. As Page (2013) wrote, the early experiences of the Muak S-aak and Meung Yum communities with their orthographies have meant not just acceptance for the orthography in their own communities but also ongoing community participation in language planning, development, and documentation activities. Participants of the preliminary trial of the FH orthography are discussing the viability of publishing their workshop outcomes in a series of stories, quotes, and vignettes.

Mapping the future for a standardised FH orthography

Orthography development is never easy and especially so in minority languages of low status in the community. Without policy and linguistic support to survive and thrive in their environment, they are not likely to survive long-term. An orthography may be shelved if domains of use are restricted – especially in extending use from the spoken to the written language. Domain expansion allows use at higher levels and for formal functions. Smalley (1959; 1965) and Seifart (2006) who have been influential orthographers supporting domain expansion of previously unwritten languages, have set the benchmark for four requisites for orthography acceptance by communities; that it should motivate use, that it has a transparent writing system, that it allows quick transition from home language to language of trade and business and that it can be reproduced easily.

Adoption for widespread use of an orthography has been a challenge for pre-literate languages and Fiji Hindi orthography development has proven to be no exception. Negative attitudes and judgements of FH as a 'L' status dialect on the continuum of diglossia, by members of the community itself (Mugler & Tent, 1998; Shameem, 2004), has made the task more difficult. In recent years there has been a resurgence of interest and commitment to FH with greater use in the media, through Fiji's Mirchi FM and support from New Zealand's Apna Network.

Botswana is a good example of a country where there is no perceived need for any minority language to fulfil higher-level or literacy functions despite the existence of 28 minority languages as Setswana and English are perceived as adequate for this purpose (Bagwasi, 2021). Should a FH orthography be made widely available to all FH speakers, and an attempt made to expand the current domains of use of the language in Fiji and in the diaspora, it may have a further chance for survival, development, and consistent use despite the inevitable presence and use of English. Expansion of use, through literacy initiatives, in formal and informal domains, in social media and for reading and writing will fulfil some requirements of higher-level domains for this community. Experience from the FH orthography trial in Auckland, New Zealand in May 2020, suggests that domains can be extended by taking the language beyond informal conversation for use in actual functions such as letter writing, poster development, writing descriptions of people, places and things, narrating fiction and non-fiction stories and developing an argument (Personal communication, Jennifer Janif, orthography team, 2021).

Using a standardised orthography to chart these stories will further consolidate Fiji Hindi's position as a language of vitality that can be expanded and developed further as the mother tongue and heritage language of Fiji Indians, with clear links and support from the other Girit Hindustanis of similar heritage. This will support all the GH's, allowing a sharing of literature, anecdotes, and historical accounts and in turn, will strengthen the unique global community of Girit descendants. For FH speakers, this has meant adapting the proposed orthography to include contextual use and examples and to standardise linguistic features for common use. Extending the trial resources to include samples of FH scripting used in social media and text messaging will also bring the orthography close to real use. The first consultations around the proposed FH orthography in Auckland is a step to wider development and acceptance of the orthography, firstly in FH speaking communities but also as a sample for further trials of the GHs, so that all have a chance to survive and thrive. The Auckland workshop and trial was a strong start to the process and exposed limitations and strengths which the FH orthographic team will utilise as they take and extend the FH consultations further, in Fiji and in the wider Fiji Indian diaspora.

This paper is a conceptual paper tracing the issues around orthography development of a GH and charting its first steps with Fiji Hindi, a non-standardised, pre-literate language, of uncertain and fluctuating status in the community of use. This first step will now pave the way for subsequent development and promotion of a much-needed orthography by the community, regardless of where the members of the community now live or have emigrated to and regardless of the use they wish to put it to.

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Demystifying research skills development: An ethnic-Fijian perspective

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Abstract

Weaving is not only an art that is significant, but it is a figurative term that might have different connotations for Pacific People. Many academics from the Pacific Islands and elsewhere have drawn attention for the need to move beyond the Eurocentric models and adopt a more culturally appropriate framework for researching Pacific issues. In the search to enhance research skills and knowledge relating to Higher Education, academics and students alike are at the juncture of searching for a framework that best represents Pacific Research Skills. The UU204 Pacific Worlds Teaching Team has embarked on a project that illustrates Research Skills Development using a weaving metaphor. This paper proposes the metaphor of weaving a mat ('i-Talitali') to describe the research process from a Pacific worldview that is underpinned by Pacific knowledge, skills, and research values. It outlines the various methods and analysis of how a Pacific Research Framework that is appropriate to the Pacific context should be constructed and developed. The Pacific students are taken through the basic essence of Pacific Research Framework through the 'i-Talitali' Framework that the Pacific Worlds, i-Talitali Team of the University of the South Pacific has embarked on.

Drawing on the weaving metaphor, we aim to use a common item in many Pacific cultures which is the mat to illustrate the different steps of the research process. To sit on a mat represents preparation for learning. Thus, while our students are seated on a mat, we then take them on a journey from harvesting the raw materials to the finished product. This is the approach that we are proposing towards the Pacific Research Skills Development.

(i Talitali- An I taukei term for Weaving)

Introduction

The current challenge in higher education is that the education systems in the small island developing states of the Pacific are facing a crisis in terms of quality (Shah, 2017). In an attempt to mitigate this challenge, the University of the South Pacific has included research components in the courses (Willison & O'Regan, 2006, 2015). One such undergraduate course is 'Pacific Worlds' (UU204), a generic interdisciplinary course offered to all undergraduate students in their second year of study. Upon completion, graduates of UU204 are expected to develop deeper learning skills through research to critically demonstrate 'Pacific Consciousness'. Strategies are implemented at USP to nurture research skills in the UU204 curriculum and assessments using a conceptual model known as Research Skills Development (RSD) (Willison & O'Regan, 2006, 2015).

However, a closer examination of the quality learning crisis indicates that the RSD model in its current form does not seem to motivate students to develop research skills in generating relevant knowledge about the diversity of Pacific societies. The crisis of quality learning is not simply the result of a lack of attention to learning, but of insufficient attention to the complex and 'context-dependent nature of learning' (Veikune & Spratt, 2011). Research studies on learning and teaching in developing contexts overwhelmingly support the view that 'context matters' (Crossley, 2010) and that "insufficient understanding of the local nature of pedagogy and professional learning is behind the failure of many international interventions to impact positively on student learning" (Veikune & Spratt, 2011, p. 1). In response to a Pacific approach in learning and teaching, the UU204 Teaching Team embarked on re-developing the RSD model by using a weaving framework, *i-Talitali*, as a metaphor. This paper argues that a recognition of the need for a 'Pacific Research Framework' for more contextualised understanding of learning and teaching within the discourse of Pacific Worlds education is warranted to deliver the desired learning outcomes. The '*i-Talitali*' model that embeds the RSD framework is of particular interest to the UU204 Teaching Team because weaving is considered to be an integral aspect of the Pacific culture.

Pacific Research Approaches-Theory Gap

Many academics from the Pacific Islands and elsewhere have drawn attention for the need to move beyond the Eurocentric models and adopt a more culturally appropriate framework for researching Pacific issues. As early as 1980, Pacific scholars have developed research models that represent the diversity of Pacific Island indigenous epistemologies (Gegeo, 2008). Some Pacific scholars (Gegeo, 2008; Thaman, 1992) have identified gaps in research skills developments processes in higher education and have suggested various metaphors as a tool to understanding society and to facilitate research work. For example, Tongan Kakala Framework (Thaman, 1992) uses a garland as a metaphor for research. The process of gathering the flowers and stringing them together to make a garland is used comparatively to the broader domain of learning and teaching process (Smith, 2014). The Fijian Vanua Framework (Nabobo-Baba, 2008) and Kaupapa Maori Framework (Smith, 1999) have been used to guide ethical considerations in Pacific research. When researching Pacific issues, Kovach (2009) argues that research methodology frameworks are particularly important for Indigenous researchers, as Indigenous frameworks explain the researcher's beliefs that knowledge is produced.

Through the facilitation and use of the RSD rubric for marking of projects for the UU204 course, it became evident that "while informative, the RSD is not concrete enough for students and leaves too much room for interpretation for supervisors" (Venning & Buisman-Pijlman, 2011, p. 38). The RSD model consists of six key elements including: 1) Embark and Clarify; 2) Find and Generate; 3) Evaluate and Reflect; 4) Organise and Manage; 5) Analyse and Synthesise and 6) Communicate and Apply. These concepts may present difficulties to Pacific students, many for whom English is a second language. An important challenge in engaging students in research and learning in higher education has to do with accessing, evaluating, analysing, and synthesising and gaining new knowledge from credible sources. Therefore, there is scope for a conceptual model that embeds the RSD framework within a Pacific approach of doing research in Pacific Studies. As Willison (2020) stated, "A challenge for educators in the 21st century then is to work out what models of learning are emerging in local and global circumstances and what balance can be struck with different modes of learning and teaching. . . ." (p. 20). Research on Pacific issues should not only be "academically rigorous but culturally appropriate" so that better understanding can be achieved. The works of many Pacific scholars on culture context in education over three decades are beginning to be appreciated as relevant resources for teaching and research in higher education in the Pacific region (see for example, Thaman, 1992; Tamasese, Peteru & Waldegrave, 1997; Smith, 1999; Bakalevu, 2000; Manu'atu, 2000; Nakata, 2001; Taufe'ulungaki & Johannson-Fua, 2005; Nabobo-Baba, 2006; Naisilisili, 2011)

Weaving and its place in the Pacific Context

i-Talitali Approach: A Pacific Model

The *i-Talitali* model was formulated not on a set of theories but through the consideration of major aspects of research process (Willson, 2020) grounded in Pacific world view underpinned by Pacific knowledge, skills, and research values. Central to the *i-Talitali* framework is the metaphor of weaving which is intended to translate research skills from abstract to simple ideas through reference to familiar cultural processes. Cornett (2011) defines metaphors as "comparisons that create mental images by connecting the familiar with the less familiar" (p. 99). 'Weaving a mat' is a metaphor that can be applied in writing through research and imagining the weft and warp as "words of narrative threads" for Pacific Tertiary students. The weaving metaphor carries the idea that weaving produces a product which is ranked according to form and construction, shaped in line with purpose, occasion, or intended recipient. The *i-Talitali* framework is constructed around a process, "the steps of which identify how approaches required for success in an activity like research already exist within longstanding indigenous experience in other contexts" (Sanga & Reynolds, 2020, p. 265). This also aligns with the idea that appropriate teaching methodologies, cultural contextualization and customization class curriculum of teaching will enhance Pacific learners' engagement in the classroom discussion and with the curriculum (Thompson et al., 2009). The facets of the *i-Talitali* research framework illustrated in Figure 1 are interrelated.

Figure 1: The *i-Talitali* Framework



STEP 1: Embark and Clarify (*Tekivuna ka Vakamatatataka*)

WEAVING: mental map of resources.

This step is about how well a student demonstrates their understanding of the topic question. Similar to the Kakala framework (Thaman, 1997), the mat is ranked according to the design and materials with a focus on weaving a mat for a particular purpose, occasion, or person in mind. Various raw materials are used for weaving such as pandanus leaves, coconut leaves and sennit. However, this paper focuses on the *Kuta* (in the Fijian and the Maori Language) as the raw material. *Kuta*, known by its scientific terms as *Eleocharis spachelata* or *Cyperaceae*, 'is a tall spikerush found on the margins of shallow lakes and other very wet places, generally with acid soils' (Moore & Edgar, 1970, p.188). This material is used for weaving of mats and other similar handicrafts by freshwater communities located inland as compared to the pandanus leaves that are commonly used by other communities in the Pacific.

As illustrated in Figure 1, *digitaka* is comparable to the harvesting process whereby the strongest and most durable raw materials are identified and harvested for weaving (Veikune & Spratt, 2016). Skilled weavers describe the harvesting of

raw materials as a ‘tough task’ which involves long hours of walking from the village to the lake where *kuta* grows and back with the load of harvested *kuta* (Bola-Bari, 2015).

For students to clearly embark on their research, they need to have a realistic understanding of the tough process involved in gathering information from online databases, libraries, and other credible sources. Just as a *kuta* harvester must walk long hours to harvest raw materials and back, so a student will need to ‘walk the extra mile’ to obtain the relevant information needed to write a good assignment. Furthermore, just as weavers have mind mental maps of their resources, students also need to be aware of the relevant literature and research in their discipline.

2. Find and Generate (*Vakasaqaaqara ka Bulia Vakamatau*)

WEAVING: Identifying and selecting suitable materials

Women weavers from Macuata, Fiji described the selection process where only the ‘green *kuta* stalk’ with ‘no red spots, no flowers’ are selected. One had to ‘hold the stalk above water with your right hand and run the left hand downwards, gently separate it from the other *kuta* plants’ and ‘move your hand to the root, and gently pull it out of the water’. One by one, the harvested *kuta* stalks are laid out. After harvesting the *kuta* reeds, they were tied in bundles and carried ‘vertically’. *Kuta* grows in lakes but after harvesting we cannot allow water to touch it again. If we carry them horizontally, they will break thus the need to carry them vertically (Bola-Bari, 2015). Buck noted that “the *kuta* was often left (i.e., under the mats) for three days” (Buck cited in Wehi, 2016, p. 20). In Fiji it required four days and four nights when ‘*kuta* was wrapped, no breeze to touch them then left to dry in the sun to give the reeds their golden-brown colour before the fine ones were separated from the wide ones’ (Bola-Bari, 2015).

This process of locating and selecting suitable materials for weaving best represents the work required in finding and selecting the information needed to write a good paper. Once relevant sources of information have been identified from credible sources, the student then needs to select from those sources what is relevant for the assignment question or research question and start taking notes with the aim of analysing, synthesising, and critiquing the information well. Just as *kuta* needs to spend three nights covered with mats to turn into the same shade so as information also needs time to be absorbed into the minds of students.

3. Evaluate and Reflect (*Vakasokumuna Vakamatau ka Vakamacalataka*)

WEAVING: Sorting and verifying

Once raw materials have been harvested, weavers need to *Vakasokumuna Vakamatau* (sort and verify) materials they have collected are strong enough to last long. This is supported by Veikune and Pratt (2016) who state, “Skilled weavers picked the strongest and most durable [*kuta*] to start the weaving because it ensures that the rest of the mat will be strong” (p. 11.) Selecting the strongest materials from the *Vakasaqaaqara stage* builds the foundation of the mat gives confidence to the weavers to focus on their weaving.

Course instructors expect the students to provide credible, truthful, and reliable information. Similarly, in the *i-Talitali* framework, students are expected to evaluate the credibility and reliability of the information they have gathered from different data sources for the purpose of trustworthiness. They also must select the data sources that will provide relevant information that could illuminate their knowledge and understanding of the assignment question. The selection process is ongoing throughout the whole research. This step is especially important when using Internet resources, many of which are regarded as less than reliable.

4. Organise and Manage (*Tuvana ka Vakatumewataka Vakamatau*)

WEAVING: Assembling and layering

In this step the weaver needs to organize the selected materials in a logical manner.

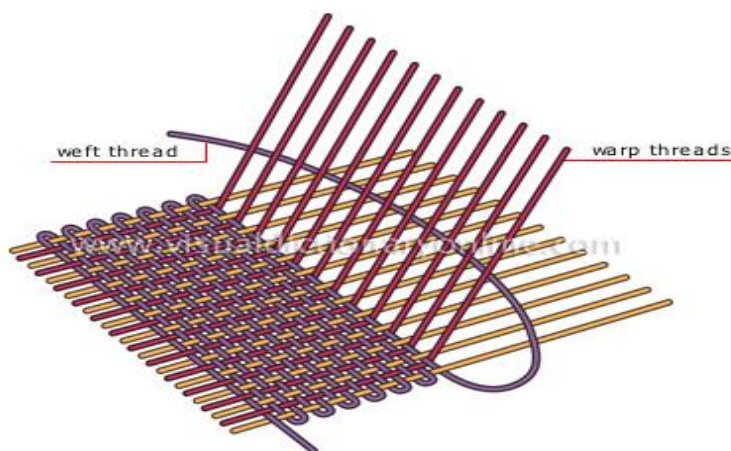
In the *Tuvana ka Vakaturewataka Vakamatau* step, the treatment and storage of *kuta* needs to be taken into consideration such as layering and constructing of *Kuta* (Figure 1). Other possibilities also must be investigated before the weaving begins such as the use of the *somo* (strands of black dyed *kuta*) to add colour and design to the mat.

The knowledge and skills required in the assembling of the *Kuta* is consistent with the selection of relevant information from various data sources that can build the literature and support learners arguments related to the research question in the *i-Talitali* framework. In this step, students consult the resources they have chosen and note the information that will be useful for their paper. Documentation of all the sources used for writing is vital such as author/s, title, publisher, URL, and other information will be needed later when creating the reference list. The question that needs to be answered in this step is how I will bring together all information or data generated to make meaning out of it. Here the students need to organize the selected materials in a logical manner. The challenge for the students is not only to select relevant information that answers their question but phrase and re-phrase or weave and reweave so that the sentence is meaningful.

5. Analysis and Synthesis (*Vidavida ka Talia*)

WEAVING: weaving the mat

Once the raw materials are ready to be woven, the weaver is clear on the concept design then begins the weaving process as reflected in Figure 1. The *i-Talitali* process places emphasis on the materials selected from *Vidavida ka talia* stage which are woven together according to the concept design. This process can be quite complex and challenging for the weavers as it requires deep understanding of the concept design and appropriate use of the materials to match the design. This process is elaborated by DeLoughrey (2007, p. iv) as she states “...I know the design clearly and the sun’s journeys pass uncounted while I work – but I need a finer skill to discipline the thread”. This description reflects on the weaving as a detailed and intricate process which requires special skills.



In the *i-Talitali* framework, the *talitali/ Vidavida ka talia* step is very important in research-driven projects as it refers to where students must use their critical thinking ability to analyse the information gathered to try and make sense of the data and to also either support or discredit their arguments.

6. Communicate and Apply (*Vakadewataki ka Sevutaki na ibe*)

WEAVING: quality of the final product; present the mat.

The final stage of weaving very much depends on how the earlier stages were dealt with. A skilled weaver knows what and how to weave. The completed mat is tidied up for its intended purpose. Fine touches like size, borders, and colours

are woven in to ensure that it is appropriate for its intended purpose and to whom the mat is going to be passed (*vakadewataki*) or first presented to (*sevutaki*). According to Ball (2005, p. 159), this final piece “brings together a whole different set of [expressions], not just of weaving . . . All these qualities of fabric [mat] have application in the interpretation of [stories]” (Ball, 2005, p. 159).

The weaving metaphor is used to help students who struggle to use research in writing about the Pacific. Students using the *i-Talitali* framework have to plan well and write a draft first, and if the information gathered is too complex then they have to further synthesise their writing. This requires them to edit, innovate, improve, and refine their writing, and, if necessary, gather more information from the literature, which means they have to go back to Facet 1 (Embark and Clarify). Students should be able to effectively communicate their ideas, thoughts, insights, and research findings to the readers through their writing.

Comparison between i-Talitali Framework and RSD

Facets	<i>i-Talitali</i> Framework	RSD
1.	Tekivuna ka Vakamatatataka: The first stage of the weaving process begins with the construction of a conceptual framework of the whole process.	Embark and Clarify: This step is about how well a student demonstrates their understanding of the topic question and development of conceptual framework.
2.	Vakasaqara ka Bulia vakamatau: preparation stage which includes selection of raw materials.	Find and Generate: Use appropriate methodology and procedures to generation relevant information/data related to the research question.
3.	Vakasokumuna vakamatau ka Vakamacalataka: Sort and verify the raw materials.	Evaluate and Reflect: Evaluate the credibility and reliability of the selected information that will provide relevant context-specific information.
4.	Tuvana ka vakatulewataka Vakamatau: organise the raw materials as per the design/conceptual framework.	Organise and Manage: Selection of relevant information from various data sources that can build the literature and support learners arguments related to the research question
5.	Vidavida ka Talia: Actual weaving process begins with emphasis on the selected materials.	Analyse and Synthesis: Edit, innovate, improve, and refine their writing, and, if necessary, gather more information from the literature
6.	Vakadewataki ka Sevutaki na Ibe: The final stage of weaving will check on the quality of the mat before it is presented.	Communicate and Apply: Effectively communicate their ideas, thoughts, insights, and research findings to the readers through their writing.

Approach to its Implementation to the Students

Students of the ‘Pacific Worlds’ (UU204) course at USP complete several online tests and projects as part of their formal assessment. The projects form the research component of the UU204 course. In view of the diversity of the students and the teaching team, the *i-Talitali* framework is developed and designed to teach research skills as a process and assess students’ understanding and development of research skills using RSD. This framework will be implemented through the development of an assessment matrix to enhance student feedback when integrated into a feedback loop in their research projects (Venning & Buisman-Pijlman, 2011). It is expected that the inclusion of the *i-Talitali* framework in the UU204 course outline this semester explicitly meets the requirements and expectations of both the teaching team and students. Additionally, this framework attempts to infuse Pacific context into the RSD model that will be trialled in a semester semester to determine its relevance and efficacy.

Discussion

In teaching research skills to students in the Pacific, we have asserted that students would better understand the concepts when alluding to something familiar thus the *i-Talitali* or 'weaving the mat' approach which translates to the Pacific Research Skills Development. Weaving as a metaphor is based on the belief that Pacific students can understand research skills from abstract to complex ideas through reference to familiar cultural processes of mat weaving. The language and images used by researchers are potent in that they help create new storylines. Hence the use of a metaphor and imagery in the *i-Talitali* framework. The 'mat' of the Pacific and the weaving processes have particular resonance with the RSD framework. This repositioning approach to learning and research is not new. It was found that students from Pacific societies find it easier to relate to pedagogies that come from their cultural experiences when compared to those terms from Western concepts.

From a social constructivist perspective, educational institutes should embrace cultural knowledge to complement teaching and learning and research at higher education. Similar sentiments are reiterated in education and research to be 'with' the people and not just about the people (Thaman, 2005). This paper proposes a research strategy that is based on Pacific epistemologies to help understand and employ western ways of researching more effectively. In support of this claim, some Pacific scholars have argued that less of a Eurocentric vision is needed to understand and conduct research in the Pacific. The *i-Talitali* framework anchors itself in the notion of working with the people of the Pacific taking the words of wisdom of Epeli Hau'ofa (2003) that if one has the interest of the Pacific at heart then one will always find a way forward and the forward impetus is 'weaving research waves the *i-Talitali* way'. An approach which would encourage other Pacific Island communities to construct and develop learning strategies incorporating their own indigenous contexts. This is a work in progress as it is an attempt to provide a 'Pac-centric' as opposed to a Euro-centric approach to the research process.

Conclusion

This paper demonstrates that the *i-Talitali* framework has the potential to provide insights on research-based learning in the Pacific context. We anticipate that this adapted framework will inform an environment for planning research that encourages deeper understanding of Pacific knowledge, and greater synthesis of Pacific literature. Such knowledge can be better applied to the Pacific context, more thoroughly analysed, and better evaluated than may be possible by the current RSD framework. The nature of *i-Talitali* framework will be worked out through preliminary research on its application in the curricular and assessments of the 'Pacific Worlds' course and in particular, the development of students' research skills.

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